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Austin, Edward K.

Title:
Attention in advertising

Place:
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Date:
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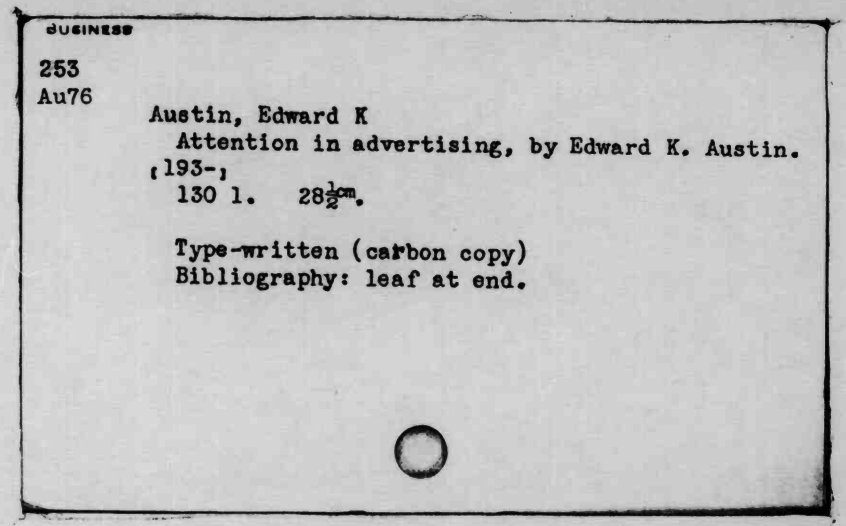

BUSINESS

253
Au76

Austin, Edward K
Attention in advertising, by Edward K. Austin.
[193-]
130 l. 28½cm.

Type-written (carbon copy)
Bibliography: leaf at end.

RESTRICTIONS ON USE:

TECHNICAL MICROFORM DATA

FILM SIZE: 35 mm REDUCTION RATIO: 12x IMAGE PLACEMENT: (IA) IIA IB IIB

DATE FILMED: 11-15-94 INITIALS: DSP

TRACKING # : MSH 02763

FILMED BY PRESERVATION RESOURCES, BETHLEHEM, PA.

2.0 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13″x18″
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

AUSTIN, EDWARD K.

ATTENTION IN ADVERTISING.

D253 Au76

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ATTENTION IN ADVERTISING

by

Edward K. Austin

MAY 17 1944 PCR

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To those who have contributed in inspiration, counsel, and direct assistance tb this volume the author wished to express his appreciation and gratitude. He is especially indebted to Dr. H. K. Nixon of the School of Business, Columbia University, for his many valuable suggestions and for his frank and generous criticisms; to the students and others who helped in some of the experimental work; and to all those advertisers who so willingly gave material and data to be used in this experimental work.

Edward K. Austin

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CHAPTER I

INTRODUCTION.

The total annual appropriation for advertising in the United States runs in the neighborhood of a billion and a half dollars. Everyone who reads a daily paper or a magazine is greatly dependent upon and materially affected by advertising. Whether we believe that advertising is a good or a bad thing, productive or unproductive, we are forced to admit that advertising is of such great significance that a study of its methods is of economic importance. This paper is not intended to survey the whole field of advertising methods, but merely one of the newer principles, the testing of advertising.

It is not the purpose of the author to prove or disprove the productivity of advertising. He is not particularly concerned here about whether advertising is helpful or hurtful. It is an accepted fact that advertising costs someone an enormous sum annually and that anything which the individual advertiser can do to increase the effectiveness of his advertising expenditure will mean a saving to him (a saving which he may possibly pass on to the consumer in the form of lower prices or better quality merchandise). What is the attitude of the business man toward testing of advertisements, what methods of testing have been used and what are the good and the bad points of these various points....these are the things with which this thesis is concerned.

Man as a whole is not an economic man; that is, man does not weigh every expenditure to predetermine that he will get the greatest amount of satisfaction in return. Neither is the ordinary advertiser an economic being. He does not weigh every advertisement for the attention, interest, and conviction values so as to predetermine his advertising returns.

"Only where advertising is the dominant factor in the progress of a business is the testing of copy practically universal. However, copy testing is just as much to be desired in the industry where advertising is not the main wheel on which the business moves as in those where advertising alone is responsible for the success or failure."[1]

There was a time when advertising was so new and so scarce that an advertiser could be fairly certain that his message would be read when he launched a campaign. Tests then were merely attempts to impress the client with one's careful and scientific methods of spending his money. However, business has changed from a seller's to a buyer's market. Our capacity for distribution and consumption is not equal to our capacity for production. The increased production together with more competition has cut prices and placed an emphasis on saving even a fraction of a cent on the manufacture and sale of a good. These facts have placed greater responsibility on the advertising man for getting results. No longer is a mere conjecture as to what people are going to do sufficient. A seller must know.

It is said that a certain large manufacturing concern has in its research laboratory a slogan, "Opinions will be tolerated only in the absence of facts." This is the attitude an advertiser should adopt. He should say, "before I risk losing my advertising appropriations I am going to test as accurately and as exactly as I can." Until recent years this has not been done to any great degree. An article in Printer's Ink Monthly tells how a company went about increasing its sales of enamel brick. They installed "the finest tunnel kiln which could be bought." They made "a complete study of their organization and market." On the basis of findings resulting from a market survey made in 18 large distribution centers

1. Groesbeck, K. Copy Testing. p. 8.

they were able to put into effect "fundamental changes in production and sales policies." Manufacturing operations were studied and analyzed to find out where economies could be effected, etc. The author concluded by saying, "Advertising space was also taken in the various business papers." This has too often been the attitude of many manufacturers. They do all sorts of research and make new improvements in production, but they feel that it does not matter about advertising since all advertising pays. Their attitude is much like that of Dr. Samuel Johnson who wrote in the Weekly Idler in 1759, "The trade of advertising is now so near to perfection that it is not easy to make improvements."

"Advertising can pay, but only successful advertising. Two advertisements may vary by several thousand per cent. Some advertisements are too ineffective to pay for the white space. Others are so powerful they pay all costs hundreds of times. Careful checking of copy, theme, layout, size, medium, position, season, etc. is found to assure that kind of success."[1]

Since the beginning of the twentieth century efforts have been made to evaluate advertising. Prior to that time, however, thoroughgoing research methods, as applied to advertising, were almost unknown. Since then a number of firms, along with business departments and psychology departments of our universities, have made some real beginnings in research. Firth, in his book, "Testing Advertisements", says, "Numerous books have been written on the subject and scores of magazine articles. Also there has been active discussion in conventions, committees, and other gatherings associated with various advertising bodies. Practically all the articulate forces have been on the side of the question which may be stated as 'more dependence on impersonal tests and less dependence on the cumulative experience of the

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1. Goode, K. and Rheinstrom, C. More Profits from Advertising. p. 52.

advertising man'."[1]

Sometimes efforts have had in view the determining of an appeal to use in a campaign, and again they have had in view the selection of a specific advertisement. One can find among the advertisers themselves those who are cold to any for m of testing, those who are lukewarm (so far these two have been by far the larger groups), and those who are interested in any kind of advertisement testing. "The validity of various methods used has been as wholeheartedly accepted by some as it has been denied by others."[2] "Many advertisement testing methods are still in the Middle Ages, but there are certain advertisers who waste not a penny on theory. They test every advertisement, every publication, on a small scale before using them on a large scale."[3]

"Up to date it is clear that much of the evidence both for and against testing has been based on single cases or very thin series of cases. The present need is for more interest in the subject on the part of those active in the advertising field--advertisers themselves, advertising managers, creative plan men, art directors, copy writers, and agency directors. Much pertinent evidence may repose in private files which would enlarge the common knowledge to the great benefit of all concerned."[4]

Prior to 1900 Harlow Gale had tested the use of relevant and irrelevant pictures in advertisements. He also made color tests on advertisements, some relating to color values.

In 1911 Strong published his Doctor's thesis, "The Relative Merits of Advertisements", the main object of which was to 'determine whether psychological tests can be employed to estimate the value of advertisements.' For about 40 years, then, we have been making efforts to test advertising. During that time, as Link says, "So many attempts have been made to apply the

1. Firth, L. E. Testing Advertisements. p. 264.
2. Gragg, Mabel T. Testing Advertisements. Harvard Business Review / Oct. 1930, p. 111.
3. Caples, John. Tested Advertising Methods. p. 7.
4. Firth, L. E. op. cit., p. 269.

scientific or near scientific methods to advertising that the mind staggers under the load of material available. Far from developing definite principles and methods of value to advertisers the net result has been confusion and controversy."[1] Unfortunately this has been true, and there is much truth in the remark by Goode and Rheinstrom that much of our test machinery rigs up like the famous comic machines of Rube Goldberg."[2] As another author expresses it, "Sometimes the reports of researches take the combination of the hardihood of a Philadelphia lawyer, the patience of Job, and the acumen of Sherlock Holmes to ferret out the facts."[3]

In comparison to the progress made in other fields in recent years, relatively little has been accomplished in advertising research. In 1900 the automobile was only an engineer's prank, yet today there is one car for every three or four people in the United States. In 1900 only 23,000 automobiles were produced, while in 1929, 5,622,000 were sold. The first airplane was flown successfully in the early part of this century. A few years ago two aviators flew from New York to Turkey, a distance of about 5,000 miles, on a non-stop flight. In 1920 the radio was not much more than a thing of earphones and static, while now programs can be carried around the world, and the radio is as clear as though we were sitting in the same room where the orchestra is playing. New electrical equipment is being brought out to save work and increase enjoyment. Advertisement research has not made so much progress.

The question may be asked why the practice of testing is not more widespread. There are numerous reasons:

1. It is a new procedure, and no business man changes his established procedure without considerable struggle. The human factor seems to retard change.

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1. Link, H. C. New Psychology of Selling and Advertising. p. 91.
2. Goode, K. and Rheinstrom, C. Op. cit., p. 213
3. Phelps, C. H. Tomorrows Advertisers. p.20.

2. The advertiser may think that he will get his pet theory exploded. All these pet theories are based on nothing stronger than mere belief, and they tend to compress a man's creative ability into molds which make him less and less sympathetic to new ideas.

3. It implies that the advertisers have been groping in the dark all these years. Mr. Carl Byoir, a newspaper publisher and for many years a close student of tested advertising, says that this is virtually true. "For years all of us have been engaged in selling advertising, but we have been so busy selling it that none of us has had time to learn anything about it. We have all done a great deal of talking about the power and greatness of advertising. We have charged industry hundreds of millions of dollars for this service, but we have not yet taken the trouble to learn what are the laws governing advertising, or to understand them."[1]

4. It is much like reducing advertising to a formula. It is a comparatively easy, or at least an accurate, thing to predict an eclipse of the sun. When hydrogen and oxygen in proportions of two to one are mixed under certain conditions, the result is always that water is formed. When a rock is thrown up, it invariably falls back to earth. It is commonly known that these things are true, and for them natural laws have been drawn up. Advertising differs from these natural phenomena, however, in that advertising deals with people, and people are governed by their own feelings, impulses, ideas, and viewpoints. The falling of the rock and the eclipse of the sun are not caused by any feeling or impulse or idea of the rock or sun, but only by certain natural phenomena. It is difficult to reduce advertising to any formula because of this difference of feelings, etc.

No doubt it would be better if the business world made the same approach to many of its problems that the engineer does. However, the engineering

1. Byoir, Carl. Lessons Taught By $4,000,000 of Tested Advertising. Printer's Ink Monthly. Oct. 1932. p. 31.

problems are in most cases concrete and definite in extent, so that the engineer is striving to achieve some definite objective and must plan the whole thing through. The business executive has a continuous performance, so he rarely plans through to the ultimate objective.

The experiments that have been made seem to prove that the effects of advertising are not due entirely to chance, but to laws. Though these laws are in most cases unknown and hard to discover, nevertheless, they exist. They may after a time be well known and formulated for practical applications. Psychological tests have discovered a great deal about human behavior, and, as more becomes known, the problem, because of its increasing familiarity, loses much of its formidableness. Any so called laws of advertising have many exceptions, and thus will always differ from natural laws. The efforts to formulate advertising laws by which the advertiser may guide his business seem to have met with no case of unquestioned success. One of these laws, and perhaps the one most frequently spoken of, is the square root law. This law, in brief, says that the returns from advertising vary as the square root of the increase in ares, and not as to area directly. Even this law, however, has its strong opponents who, through their own tests, prove that the returns vary directly as the increase in space or possibly in greater proportion than the space. As Gragg says, "The vital point at issue is not whether advertisements for specific campaigns can well be selected on the basis of tests but whether basic advertising laws might be discovered. The necessity of conducting tests for each campaign might be obviated in a large part if basic general laws of advertising could be discovered."[1]

5. Testing requires a great deal of patience. Byoir, in speaking of testing of advertisements, says, "In the development of Blondex Shampoo we tested over 112 advertisements before we found a single advertise-

1. Harvard Business Review, Oct. 1930 Loc.cit., p. 112.

ment that would sell twice the cost of the advertising. But of those 112 advertisements regarded as unsuccessful, we developed copy upon which the business was established."[1]

6. Testing is costly. Generally the making up of an advertisement and testing it will cost a hundred dollars or more. The advertising man feels that he has spent this much, and that it would be a waste unless he used the advertisement. If the advertisement is proven to be poor by test such an attitude is foolish. What the advertiser would be doing would be spending more money to confirm what he already knows about the advertisement. It is said that a certain large company spent over $40,000 in a tryout test and found that they could not market a certain product on a profitable basis. They felt satisfied, however, because, they might have lost several times that sum, had it not been for this expenditure. Hardy says that a certain firm spent $200,000 building their plant and they then found that they could manufacture in the short space of six months all the product that the market could absorb in ten years. A loss of a few thousand dollars would have been much more profitable.[2]

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1. Printer's Ink Monthly, Oct. 1932, loc. cit., p. 31.
2. Hardy, Charles O. Risk and Risk Bearing. Ch. 2.

CHAPTER II

TYPES OF ADVERTISING TESTS

Over the past thirty years there have been developed several methods of testing advertisements. In general these methods may be grouped in four classes as follows:

1. field tests
2. historical method
3. coupon inquiry method
4. laboratory method

The four are all rather broad terms. The first includes the try-out method, the consumer jury method, and the questionnaire method. Sometimes the questionnaire method is classed as a form of laboratory test. However, the classifications above are by no means hard and fast and are arranged so merely for the convenience of the author.

The try-out method is probably the most reliable kind of test, that is provided the test is properly conducted. This, however, requires a good deal of skill and experience on the part of the director. Firth says that the sales test (or try-out method) "is the most nearly basic of all tests that have been commonly used. There is, in fact, little doubt of its validity in principle. The only doubt concerns its proper carrying out (which is difficult owing to the clumsiness and cost thereof) as well as the trouble experienced in eliminating accidental and casual factors."[1]

All experience, in a way, may be said to be due to observations and experiment. Observation is merely noting conditions as they are. Experiment is [illegible] taking observations under controlled conditions. A try-out test endeavors to do both of these, to observe and to experiment. As the name implies, it tries out the thing to be tested, tries it out under the same or nearly similar circumstances to those under which the sale is made. It is based on the theory that the success of any campaign will depend

1. Firth, L. E. op. cit., p. 256.

on the volume of sales secured in response to the advertising and sales effort expended.

In conducting this type of test, the first thing to do is to select the try-out towns. Next is to set a test period and run the advertisements checking their sales pulling power. Sales pulling power (in this sense) means sales to consumers and not sales to dealers. The advertising is directed toward the consumer; and, so, to test the advertising, one will have to check the consumer sales. Mr. F. R. Coutant, the director of research of Pedlar and Ryan Inc., in a report submitted to the American Marketing Society, says a good sales test requires at least four months time, two months observation prior to the test and two months of advertising.[1]

The main thing that must be taken into consideration in selecting the try-out cities is that the cities should be representative. Many things must be considered to determine whether a city is representative of the whole market; viz, credit conditions, employment conditions, diversification of industry, financial conditions, educational conditions, competitive conditions, and many others.

After the test cities have been selected, then comes the work of advertising and checking of the sales resulting therefrom. Coutant says there are four steps in this procedure:

1. About two months before the advertising, check the number of products in the hands of the dealers (on the shelf and in the store room).

2. When ready to advertise, count the number again; find the purchases made by the dealers since the first count; add this to the first count; and deduct the second count. This will give you the number of articles sold. Dividing this by the number of days elapsing between the two months

1. Report to American Marketing Society. Printers Ink Monthly. March 1927

counts will give the number sold per day (on the average). This makes the sales figures much more comparable.

3. After the advertising has run, repeat the count and determine the average daily sales.

4. A month after the test is run, make another count and determine the average daily sales. This is done because the advertising might have been slow to take effect, having a kind of cumulative effect. If this be the case, then it would obviously be unfair to take as final the count made immediately after the test.

It is much more satisfactory to divide the cities into test cities and control cities. The new advertising campaign is to be run in the test cities, while the regular campaign is being conducted in the control cities. In this way an increase of sales in the try-out cities can more accurately point to a strong feature in the advertising campaign.

The try-out method has a number of distinct advantages. Some of these are as follows:

1. The conclusions are drawn from the actual results, and not from mere surmises. The try-out method measures what people do, not what they think they would do, or think that others would do.

2. The method may be used to determine a number of things: the advertising appeal to be used, the size of the advertisement that is most profitable, the sales policy, such as selecting a certain trade channel to use or determining a certain price to charge.

3. It is probably the most widely accepted of all the methods. Many advertisers think that all other methods are not worth considering. This confidence lends to the strength of the try-out method.

D Disadvantages of the Try-out Method

1. It takes a long time to get accurate results on a fair test, and

the advertiser may not have the time or be willing to wait until such a test is made.

2. This method usually is a very expensive one. Sometimes the try-out may cost thousands of dollars and not reveal any decidedly strong appeal.

3. It is difficult to select cities which will be representative ones.

4. It requires a good deal of skill, experience, and patience in checking the sales figures and drawing accurate conclusions.

To these disadvantages Firth adds two more:

5. "One definite drawback of the sales-area test lies in the fact that it practically rules out one form of national medium, that is, the magazine, in cases where the campaign cannot be transferred automatically from some other medium to the magazine medium."[1]

6. "Another drawback of this case is a less tangible one. It is the lack of what we call the 'reverberatory effect' of advertising, namely, that powerful overtone of advertising which comes from the very fact that it is being run everywhere. This is a plus effect which may be greater with some campaigns than with others."[2]

Consumer Jury

Sometimes the advertiser has what is termed a consumer jury located in various sections of the country. For every test he submits the advertisements to these same persons. One advertising agency has a consumer jury of 500 persons. These people are located in every state in the union. To this jury are sent advertisements of both campaigns when the company

1. Firth, L. E. op. cit., p. 257
2. Ibid., p. 257.

wishes to know the preference of one campaign against another. Usually about three advertisements in each campaign are sent. The jury member is asked to rank these advertisements in the order of their importance in influencing him. He is also asked to state which of the advertisements he first noticed, and which he read first. When these results are tabulated, the company has a definite indication of the effectiveness of the advertisements themselves and also an indication of the comparative pulling power of the two campaigns.

This method of determining which of a series of advertisements is most influencial in creating a sale, which is next of importance, etc., is called the "Order of Merit Method". This method is used in tests to find the feeling tone of lines, color, type; to determine the proper size of container to use, the design of the container, and other elements.

Newhall found that where groups of 5 people were used in making order of merit tests, the intercorrelations averaged plus .50. Where 15 subjects were used to the group, the correlations averaged plus .72, and where there were 30 subjects to the group, he found a correlation of plus .75. He found that 100% of the group intercorrelations were positive and that 90% were above plus .50. In 19 of 27 groups examined the subjects exhibited greater reliability in their judgments of the "best" advertisements than they did in their judgments of the worst or "poorest" advertisements. This series of tests seems to prove that the order of merit method is quite accurate and valuable.[1]

The author made two tests using the order of merit method. One of these tests resulted in a correlation of plus .88 and the other in a minus .28. The tests were made on 165 subjects, which is a sufficiently large number to minimize the chance of error. Just why there should be so much

1. Newhall, S. M. Reliability of Order of Merit Evaluations of Advertisements. Journal of Applied Psychology. p. 532 Dec. 1930.

dissimilarity between the tests the author is unable to explain.[1]

One is sure to ask, "Why submit the advertisements to consumers who do not know anything about advertising. Why not let the advertising men decide for themselves?" Starch says that the judgment of advertising men is often wrong and that they are hardly better judges of what will appeal to the public at large than other observers of human nature.[2] Goode and Rheinstrom tell us that "eleven twin-test cases were carefully presented in turn to the assembled members of fifteen advertising clubs scattered over a wide part of the continent. Every member (there were approximately 1000 of them) had his opinion. Few ever missed voting." The result was that there was a mere 54% average of correctness in the judgments of the advertising club members.[3] Groesbeck comments, "It should be noted that the more a person knows about advertising or the more conscious a juror is that he is functioning as an 'advertising expert' the less liable one is to get the correct results. Consumer jury tests submitted to committees of advertising men do not commonly work out."[4] Giellerup sums up the situation by saying, "It is not the taste of the angler that determines the kind of bait but the taste of the fish."[5]

"It would be extremely valuable to the advertising business to be able to establish the opinion test or something equally quick and cheap. As it stands at present, the opinion test on advertisements in layout form seems to be the most practicable, but unfortunately even this is at its best in passing upon underlying themes and objectives which are the very things more likely to be decided without any testing. Conversely it is at its weakest when dealing with unpredictable differences as

1. For more detail see Appendix page
2. Starch, Daniel. Principles of Advertising. p. 303.
3. Goode, K. and Rheinstrom, C. More Profits from Advertising. p. 3.
4. Groesbeck, M. L. op. cit., p. 16.
5. Giellerup, S. H. Advertising and Selling. October 1931, p. 28.

between individual advertisements, for instance."[1]

Questionnaire

The third type of field test is the questionnaire method. Although the use of the questionnaire may more properly be called a method of securing pertinent information rather than a method of testing, it will be discussed here. Under this method the advertiser submits questions to the consumer to determine his reactions to the advertising appeal, to the sales policy, or to the product itself. These consumers may be chosen at random from the names in the city or telephone directories, or from the advertiser's own customer list.

Forty odd years ago Stanley pointed out that psychology is practically the only science that resorts frequently to the use of the questionnaire.[2] Ruckmick and Miles have pointed out various disadvantages of the questionnaire and joined Stanley in doubting the scientific value of this method.

Disadvantages of the Questionnaire

1. The prodedure stresses explicit answers because they take less time and can be more easily classified and more readily treated statistically. Sometimes the questionnaire cannot be answered by simple yes and no answers.

2. Frequently the questions relate to habits or actions of persons who are to answer, and they may not know an accurate answer to these questions. The questionnaire is weak because it relies upon the ability of people to determine the causes of their actions and almost any psychologist will say that people, as a rule, do not think that they think they think. This, of course, does not mean that the subject knowingly falsifies his report. On the contrary, he is apt to really believe that this certain appeal is what caused him to buy. In this way he is merely rationalizing or substituting

1. Firth, L. E. op. cit., p. 203.
2. Stanley, H. M. Remarks on Tickling and Laughing. American Journal of Psychology., 9, 1898, 235-240.
3. Ruckmick, C. A. Uses and Abuses of the Questionnaire Procedure. Journal of Applied Psychology, Feb. 1930 p. 32.

unconsciously a reason for the real reason.

3. It is very difficult to frame a question so as not to convey either a positive or a negative instruction to the subject, that is, to frame it in such a way as not to predetermine the answer.

4. The data may be interpreted in a way different from the way which the person who answered the questionnaire intended it.

5. Statistical treatment often gives doubtful data an authoritative tone by quantitative measures.

6. The unreturned letters and unanswered questions are usually ignored. This is unsafe, however, because there may be some very significant reason why they are unanswered.

It is the author's opinion that most of the arguments against the use of the consumer jury and questionnaire methods are largely based on what might happen rather than does happen; in other words, based on defects which can be remedied or eliminated with careful planning.

"In spite of the objections, there is evidence available tending to show that there is reasonably high correlations between the results obtained by the questionnaire and the actual sales or inquiry results obtained."[1]

Giellerup says that the results of a Kolynos questionnaire showed that the series of advertisements which brought 65% more sales brought 44% more inquiries and was rated 63% higher by the consumers.[2] Starch tells about a questionnaire submitted to 1000 automobile owners by the Liberty Mutual Insurance Company in an effort to find the best appeals to use in their advertising. On the basis of the results, six advertisements were made up and presented in different ways. These advertisements were subjected to a series of tests to determine the relative merit of the advertisements as a whole,

1. Gragg, Mabel T. Harvard Business Review, Oct 1930, Loc.cit., p. 121.
2. Giellerup, S. H.

the value of the illustration, of the copy, of the memory value of each, and the suitability of the trade mark. These tests pointed out that one advertisement in the six was decidedly better than the rest. With this advertisement as a basis of the campaign, they had a very satisfactory result of 77% increase in sales the next year.[1]

A very comprehensive survey made by the Associataion of National Advertisers shows some of the things a questionnaire may reveal. This report was considered so thorough that it was given the Harvard Award for the outstanding case of commercial research during that year. From the data obtained, it was found, for example, that at all times more women listened to the radio than did men; for a program advertising cigars the audience was composed of 46% women, 25% young people and only 29% men. Any questionnaire which reveals this type of data is extremely valuable to the advertiser.

Advantages of the Questionnaire

1. A great deal of time is saved, thus enabling the investigator to get cases in the hundreds when they might be in the dozens (using other methods)

2. There is a great possibility for getting cues for further investigation (such as, learning new selling points or finding out about weaknesses that might be corrected later.)

HISTORICAL METHOD

This method is based on the assumption that the practices which have persisted over a period of years are those which the advertiser has found to be successful. It may be viewed as a kind of genetic method which proceeds by tracing the developmental changes through advertising history. This method has been termed a kind of advertising survival of the fittest. The methods which have decreased in their use are considered as

1. Starch, Daniel. op. cit., p. 327.

not so profitable as others. This means that these methods are found to be unfit and are weeded out. This does not necessarily mean that the advertisers selected particular practices consciously. These practices may have been, and quite probably were, the results of a trial and error process somewhat like that by which a baby learns to walk. An example of this method is that of counting in a magazine the number of full pages of advertising in relation to the number of smaller advertisements in orderto determine what has been the trend over a period of years. Through this count, the investigator concluded that history regeals the fact that it is more profitable to use the larger sized advertisements(or vice versa if the percentage of smaller sizes is found to have grown.) The assumption is that the advertisers can survey the practices of the past and thus have a better idea of what to do to insure better success with their advertising.

Advantages of the Historical Method

1. The historical method is relatively inexpensive, requiring no advertisements to be constructed before the testing but requiring merely the services of the investigator and the periodical files of the public library.

2. Under this method the investigator does not control, nor does he evaluate. He merely records what has happened already. In a way, the figures interpret themselves. In this way there seems to be less likelihood of personal factors entering and causing errors of judgment and bias.

3. The investigator can find certain general laws which relate to advertising, and through a knowledge of these he can more easily find the rules which relate to his own specific case.

Disadvantages of Historical Method

1. This method merely tells the kinds of advertising for which money was spent in the past and in that way seldom aids in increasing future sales.

2. The historical method does not take into consideration the sudden changes in advertising custom and changes in the habits of the customers. Some of these habits have changed almost overnight. For a short time, at least, a knowledge of these changes and of how to meet them has proved very effective from the sales standpoint.

3. It is inadequate to interpret the sales of any individual advertisement. Advertisements must be constructed to meet a definite set of circumstances and perform some specific task. It is admitted that one can gather certain general rules ar laws, but there are bound to be many exceptions to these laws, and how is the advertiser to know that his own case is not an exception? The conclusions drawn through the use of the historical method are generally statements such as "large space is generally more effective than small space." Such results, however, based on averages, and since there are so many deviations from these averages, it is doubtful whether the conclusions are worth while after all.

A much more reliable historical test is seen where the experimenter takes the history of one particular concern and by means of counting the coupon returns from the advertisements used over a period of years is able to draw conclusions relative to the proper size, location, type of appeal, etc. that this company should use. This method of research, however, properly belongs under the heading of coupon inquiry method, and the reader is referred to that part of this paper.

Kitson, one of the investigators who have done much work under this method, says, "We are not proposing the historical method for the solution of all the advertising and selling problems. We advocate it merely as one form of scientific investigation which will permit us to supplement and corroborate information secured from other tests."[1]

1. Kitson, Harry D. The Mind of the Buyer. p. 22.

COUPON INQUIRY METHOD

The third method, the coupon inquiry method, is one which determines the effectiveness of an advertisement by tabulating the inquiries received through coupon returns. Under this method the advertisement is inserted in a medium, and a careful record of all coupon returns is kept.

The use of coupons to determine the effectiveness of an advertisement is a subject of which there is a great deal of controversial opinion. Giellerup, for instance, has almost absolute faith in the results. Gross, on the other hand, working under Nixon, found there was a variation in correlations (between coupon inquiries and sales returns) all the way from minus 1.00 to plus 1.00. For some 20 different cases which he worked on, he found an average correlation of only plus .475. These 20 cases were not all advertisements of the same advertiser, or even of the same class of products.[1] This, of course, makes the average somewhat questionable, even assuming that the data were as a whole correct. In several of the cases Gross merely took the conclusions drawn by the advertisers. The advertisers did not say what kinds of appeals were used, or exactly how they arrived at their conclusions. In one case where the advertiser had reported, "We have reluctantly been forced to the conclusion that coupons have little or nothing to do with the matter of sales effectiveness," Gross concludes that this statement merited a correlation of -1.00/ It is the opinion of the author that such a conclusion is not warranted. "Little or nothing" does not mean an absolute dissimilarity. It would mean 0.00 or possibly a small positive correlation. The author contends that if the coupon tests gave correlations of -1.00 they would be just as valuable as those which gave correlations of plus 1.00. A correlation of -1.00 would mean that

1. Gross, Leonard. Facts Bearing Upon the Use of Coupon Inquiries as a Gauge of Advertising Efficiency. p. 16. (unpublished)

the sales results and the coupon inquiry results were exactly opposite. The advertiser could then pick the advertisements which were weakest in coupon returns and assume that they would be strongest in sales pulling power. Gross says that mail order advertisers "almost unanimously report that they cannot depend upon the inquiry count for a measure of selling efficiency."[1] However, of the twenty odd cases which he cites, seven are cases of mail order advertising. These seven cases show correlations of plus .828, plus .902, plus .59, plus .857, plus 1.00, plus 1.00, and minus .80. It is seen that six of these cases are positive and high enough to be significant. If one averages these seven cases, as Gross did all 20, a positive correlation of .625 is found. This figure is high enough to be called significant. Thus Gross seems to contradict himself.

Many advertisers feel as does Firth. He says, "All in all I am a little dismayed at the lack of evidence concerning the relation of inquiries to sales. We have had the opinions of well known advertising men in favor of a definite relation, but the evidence we can really find is so small as to be practically non-existent. Personally, I want to go on record as believing in this relation, but belief is as far as I can get."[2]

The author is inclined to agree with Gragg who says, "There is a fair measure of agreement to the conclusion that a keyed advertisement which ranks high in sales value ranks high in inquiries and vice versa."[3] Without doubt, the advertisement which is designed to bring in inquiries will bring in inquiries out of proportion to its sales value. "Every once in a while an advertisement that is a ball of fire in getting inquiries is a wet sponge in getting sales."[4] These advertisements, however, may fairly

1. Gross, Leonard. op. cit., p. 17.
2. Firth, L. E. op. cit., p. 55.
3. Harvard Business Review, Oct. 1939, loc. cit., p. 112.
4. Giellerup, S. H. Ad Testing vs Ad Gambling.
Sales Management October 10 1932 p. 334

be detected and excluded.

Under this method it is generally assumed that if a large number of advertisements is included in the statistical study, their inequalities will tend to cancel or neutralize each other. Consequently, if this be true, any one factor, such as size, color, or position, can be measured because all the other elements that enter will neutralize themselves. It is questionable whether this is a safe assumption.

The two studies which have been most comprehensive are that of Falk, studying the returns of advertisements of the Gordon Van Tine Co over a period of 14 years,[1] and that of Starch, whose exhaustive analysis is based on five million coupons.[2]

Criticising the work of Starch, Gragg says, "For his analysis Starch obtained a valid quantity of data. It is unfortunate, however, that he did not make fuller use of his material. Starch apparently believes very strongly in the principle of compensating influences. The assumption upon which his conclusions appear to be based is that in measuring one element in advertising the other elements which might influence the results naturally will be distributed so as to set up a balance among themselves and as don't influence the net results. For example, in determining the effect of size of advertisements, evidently the only precaution Starch took to avoid undue influence from extraneous factors was to use those advertisements which placed approximately equal emphasis upon the securing of a response. Using those advertisements, he tabulated the returns of various sizes and assumed that the difference in size was responsible for the difference in number of inquiries. Inasmuch as there was no effort made to see that the advertisements as grouped by size were equal as to appeals, use

1. For more detailed report see page
2. Starch, D. Analysis of 5,000,000 Inquiries Received by 163 Firms.

of color, headlines, commodity advertised, time of showing, or other factors, it is impossible to know whether the inquiry returns of various sizes were the result of these extraneous factors of the result of their sizes. It may very well be that the greater use of color in full page advertisements than in advertisements of other sizes had fully as much influence on the results as size had. In any event, no criticism of the business return method of testing advertisements is intended, since it is possible by relatively simple statistical means to set up adequate control of the variables and so to be certain that a single factor is being tested."[1]

It is quite possible that at sometime someone will make a test in which a large number of representative advertisements whose coupon returns are known, are separated into a number of groups, each group containing advertisements which are similar in every major respect except one, let us say, size or color. If this should be done, then then experimenter could compare the groups; and if he found any noticeable differences, he might correctly assume that they were due to the one factor in which the groups differed. This type of testing would necessarily be quite tedious and therefore rather expensive. Thus it might necessitate the cooperation of several advertisers. However, this would do much to settle once and for all the question whether or not there are any so called advertising laws.

Advantages of Coupon Inquiry Method

1. The coupon inquiry method might be used very effectively in combination with the try-out test. Under this combination the advertiser, instead of going through the long and tiresome method of checking the sales, merely checks the coupons.

2. Since most of the work is in checking and filing the returned coupons there is small chance for unconscious bias on the part of the investigator

1. Harvard Business Review, Oct. 1930, loc. cit., p. 122

to enter.

3. "The inquiry test is most useful in comparing individual advertisements one against another, and even in segregating the effects of different elements within individual advertisements. This makes the inquiry test more flexible and useful in narrower and lesser ways, such as the gradual improvement in methods and techniqus of creating advertisements."[1]

Disadvantages of the Coupon Inquiry Method

1. Under this method conclusions must always be qualified by the statement "caeteris paribus", other things being equal. It is doubtful if this statement is true, or at least true in the large percentage of cases.

2. It is doubtful if the data are of practical value for the particular advertisements since the general results are based on averages, and the advertiser must deal with the specific case. It is possible that there will be so many exceptions to the average that the average will be almost worthless.

3. Assuming that this method is effective, it is and must be a measure of the past, of money already spent, and so it is largely a method which tells the advertiser whether or not the advertisement was successful rather than telling him that it will be successful, or saying why it is successful. As Firth says, "It is almost impossible to do clean-cut pre-testing by means of inquiries from magazines."[2]

4. The use of coupons gives the advertising man a temptation to go after coupons and to subordinate the general sales message to the emphasis on securing the coupons. This point is, of course, not an absolute bar to the use of coupons as a check. When the coupon is used as an integral part of the advertisement and is part of the marketing strategy back of the ad-

1. Firth, L. E. op. cit., p. 258.
2. Ibid., p. 258

vertisement, it needs no defense, but when it is used in an advertisement whose specific purpose is to secure response to coupons, then the response elicited cannot be assumed to be accurate as an index of the selling power of the advertisement.

5. The coupon returns vary sometimes because of a difference in the products offered. An advertisement of Resinol using a coupon offering a free trial size and a free booklet brought 5000 replies; but when the offer was changed to an offer of only the booklet it pulled only 560 inquiries. Starch came to the conclusion that a variation of the offer has an important effect on the returns. Using the returns of coupons offering booklets as an index of 100, he found that pamphlets had an index of 153.2, recipe books an index of 137.8, and a charge offering (requiring the payment of money) an index of 55.9.

6. Sometimes an inquiry is costly no matter what the price. A Chicago real estate firm advertised, "No cash required...move in now...this beautiful home may be yours." This advertisement brought 700 replies but not a single sale.

7. The number of replies may possibly be influenced by factors that have little bearing on the effectiveness of the advertisement in securing sales. For example, it may be increased or decreased by a change in the form, position, or size of the coupon itself.

8. Some critics say there may be a close relation between the coupons returned and the number of sales effected, but that many times the coupons cause a loss of good will. The inquiries would show only the favorable cases, and none of the unfavorable ones.

9. Firth says, "The chief drawbacks of the inquiry test are the length of time required (often causing the advertiser to run out of his

season) and the fact that most forms of local media do not lend themselves to the inquiry test, thus making it difficult to relate it absolutely to any basic sales-area test."[1]

The author does not believe that these criticisms are very serious, that is, that they could not be remedied. Due allowance could easily be made for the size, shape, or position of the coupon. The advertiser could adopt a standard type and eliminate this difficulty. The seasonal factor could also be computed and allowance made for it. The advertisement which has copy that aims at securing coupons might easily be thrown out of the group to be examined. In other words, the criticisms are either against what might happen or against specific cases instead of against the method.

LABORATORY METHOD

The fourth type of testing is the laboratory method. This method covers a wide field. The following are only some of the types of laboratory tests that have been used in recent years by experimenters:

1. Association Method
2. Correlation method
3. Direct impression method
4. Direct observation method
5. Discrimination method
6. Distraction method
7. Order of merit method (listed by author under field tests)
8. Paired comparisons method
9. Paired associates method
10. Reading test method
11. Pure recall method

1. Firth, L. E. op. cit., p. 259.

12. Aided recall method

13. Rating scale method

14. Recognition method

15. Tachistoscope method

16. Perception time method

This is only a partial list, but it may serve to show the breadth of the field. The writer does not intend to enter into a detailed discussion of all these methods. However, examples of the use of some of them will be given later.

The laboratory method has been used by many research men since Gale began its use prior to 1900. With the passage of time there has been a growth in the number of laboratory methods and a corresponding refinement and betterment of these methods.

Starch draws the conclusion from a score or more of laboratory tests which he performed that one can use the laboratory method very effectively in that one can determine the effectiveness of the various elements, such as color, size, headline, etc.

Advantages of the Laboratory Method

1. It is a means of pre-testing, for the test is applied before the advertisement is placed in circulation. The tests enable the advertiser to know fairly well what to expect from his advertising.

2. Laboratory tests are analytical for the most part. They evaluate the advertisement without particular reference to the temporary market conditions. but in doing so they test the advertisement in its various elements. They are largely psychological tests. They determine the comparative likelihood of the advertisement's being seen (attention value), of its being read (interest value), of its being remembered (memory value), and

of its facility for creating a desire for the product. "It is through this analytical sort of procedure that the psychologist may finally achieve the accomplishment of putting advertising upon a completely scientific basis."[1]

3. The laboratory method is fairly rapid and inexpensive. It does not require large sums for the use of advertising space as is necessary in some of the other methods. The experimenter can draw his conclusions in a relatively short time. It seldom would take more than a few days for the test.

4. The experimenter is able to control the conditions surrounding the advertising and thus test accurately one factor at a time.

Disadvantages of the Laboratory Method

1. One of the fundamental weaknesses of the laboratory method has been the fact that the advertisements have been frequently tested under artificial conditions. The subjects or judges are fully aware of the fact that they are being tested, and so their reactions are not natural. The tests are frequently conducted in the classroom. Conditions here are different from the usual conditions in respect to time, comfort, thoughts of the subjects, and still other factors. The copy is sometimes typed on small cardboards, and the subjects are asked to judge these cards as to the value of the appeal. Certainly this is not the usual way of seeing copy.

2. Many laboratory tests have the disadvantage of being too abstract. The experimenter tries to determine the value of such appeals as sex, hunger, health, etc. When these appeals are used in the abstract, that is, without considering the type of product they are to be used for, the results have little practical value.

3. Another criticism that is frequently made is that the subjects

1. Lucas, D. B. and Benson, C. E. Psychology for Advertisers. p. 281.

on whom the tests are made are not truly representative of the whole reading public. Therefore, the results cannot be construed as applying to the whole group, but only to the particular few who took the test. Students, on whom the tests are usually conducted, are naturally above the level in education, intelligence, and wealth. Thus their reactions differ from those of the housewife, the factory worker, and the office employee.

4. The laboratory test is conducted by the experimenter who, it is claimed, too often sets out on a test with an idea which he wished to prove. This limitation, however, is not peculiar to the laboratory method; nor is it characteristic of all laboratory tests. It is true that there is probably more of the human element in this method than in some of the others, and that this will mean more likelihood of error, but with an unbiased investigator this would not be true.

5. Results under the laboratory method are often based on comparatively few data. In the writer's opinion this is one of the few justifiable criticisms. However, it is a defect that can easily be remedied. Some people have tried to draw up general rules or laws relating to man as a whole, when they obtained their data from as few as eight or ten subjects. For instance, Gale made a test on nine men and seven women to determine the attention value of colors. He concluded that red was greatest in attention value for women and black for men. The results of this test have been used many times to show the relative values of colors, although the number of subjects is so small that any conclusions drawn would not be reliable. Starch says that a group of twenty five would be large enough.[1] However, to lend strength to his test any experimenter would do well to have at least seventy five or one hundred subjects.

1. Starch, Daniel. op. cit., p. 301.

6. Sometimes the criticism is made that no matter if one used thousands of subjects the conclusions would apply to the thousands and not to the millions of other people. This is an unfair criticism, since almost anyone knows that a chemist, in testing the city water supply, does not test each drop of water, but he gets what he thinks a representative sample and draws his conclusions from tests on this, After the national election in 1936 Mr. Landon sent Mr. Roosevelt a telegram conceding the election to him and congratulating him. When this telegram was sent, however, only about one fourth of the votes had been counted. The basis of the telegram was the result of the representative sample.

7. Firth says, "Most of the laboratory tests are old fashioned and extremely academic. They have not to any great extent dealt with results of human behavior but rather with subjective theories of human conduct."[1]

Most of the criticisms may be strong or they may be weak and unjustifiable, depending on the particular test and how it is being conducted. However, if the experimenter tries, he can eliminate practically all these disadvantages. It is clear that most of them are based on possibilities of isolated cases rather than actual and usual cases. They are really criticisms of particular tests rather than of the laboratory method as a whole. If these cases were sample cases, the criticisms would be more just, but they are not representativeof the laboratory method.

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1. Firth, L. E. op. cit., p. 261.

CHAPTER XII

TESTS ON ATTENTION ELEMENTS

Some psychologists have said that the road to a sale is divided up into at least four steps or stages: namely, attention, interest, desire, and action. The attention stage will be the only one discussed since this dissertation concerns that stage primarily.

Attention is a word derived from the Latin expression "ad tendo" meaning to grasp. So far asthe present meaning of the word is concerned it may be said that to grasp means to concentrate the mental faculties on a thing.

There are several things that may be influential in attracting attention. Most important of these are: size, location, color, repetition, movement, intensity, medium, contrast, isolation. Of these, the first four are of most importance from the point of view of testing. Very little has been done in regard to tests relating to repetition. However, of the other three factors there are many tests. It is the purpose of this chapter to look at some of these tests and see what conclusions may be drawn from them.

SIZE

Probably more tests have been conducted to find out the attention value of size than of any other element of attention. It is rather difficult, indeed it is seldom possible to isolate size from the other factors of attention. Poffenberger says that one must recognize a number of obstacles to be overcome in doing this:

1. The full page is usually one which has preferred positions, such as the back cover, etc. Since this is the case, if one increases the number of advertisements used in a test, the size factor would constantly be disturbed by this factor of location. Constant errors can very easily vitiate conclusions.

1. Poffenberger, A. T. Psychology in Advertising. (1925 ed.) p. 175.

2. A full page advertisement can have no competition on the page, since it occupies the whole page. Likewise, the half page advertisement can have but one competitor, while the quarter page possibly has three competitors. One of the psychological laws of attention is that "the amount and duration of attention depend on the absence of counter attractions." Since the advertisements smaller than the full page may have the counter attractions, a very decided difficulty inserts itself.

3. Large advertisements usually have more time and money spent in their preparation, since the space cost is much higher than for the smaller advertisements.

4. A large part of the value of the large size depends on contrast. Thus in some magazines (where full page advertisement is rare) the contrast between the full page and other sizes is much greater than where the full page and the double page spread are common. Poffenberger says that this conclusion may be proved by widespread results obtained from mail order catalogues wherethe relatively few full page advertisements bring in many times more returns than the others.

5. Large space creates the impression of importance and reliability. If all other things were equal, this one factor would add considerably to the value of the large size.

"Arguments in great number have been presented to show that any amount of space is worth as much or more than it costs, and arguments in equally great number and apparently in equal force have shown that the space is not worth what it costs after a certain magnitude is reached. Experimental studies have led to equally uncertain and equivocal results."[1]

Many psychologists believe that the attention value increases with an

1. Ibid, p. 174.

increase in size, but this increase follows the so called square root law. The square root law, in brief, says that the attention varies as the square root of the increase in space. If one quarter page advertisement is read by 100 people, a full page advertisement will not be read by four times as many but by only 200 people (two times as many----two is the square root of four). If the full page has an attention value of 100 then the half page will have a value of 71 and the quarter page of 50.

Recall and Recognition Tests

1. Adams and Dandison conducted an experiment in which the investigators prepared cardboards with colored squares on them. These squares varied in size as follows: ½ inch, 1, 1½, 2, 2½, and 3 inches square. The cardboards were divided into six rectangles with one of the squares placed in the center of each rectangle. On card "A", the first rectangle, reading from left to right, would have on it, let us say, a red square one half inch in size. The next cardboard would have the squares in changed positions. The one half inch red square would now be in, let us say, the second rectangle, and its former position occupied by another size. After the exposure (the cardboards, 36 in all, were shown to the subjects for three fourths of a second each) the subject was asked to record the colors in the order in which he saw them. By the shift of color from one rectangle to another, the position and the color factors were assumed to be equalized. This left only the size factor. The results of this test are:

Size (in inches)	Number of Initial fixations	Percentage
½	212	5.5%
1	384	10.0
1½	608	15.6
2	641	16.7
2½	808	21.0
3	1199	31.2

This test was conducted on 107 people, 54 women and 53 men.[1]

In a previous test made by Adams the following ratios were found:

Size (In inches)	Values
1 x 1	100
2 x 2	205
3 x 3	275

There is a close degree of similarity between these two tests. They are similar in nature, and the results are very much alike. The criticism has been made that both tests have the weakness that they are testing size in something other than advertisements: so the assumption that the same ratios would apply to advertisements would possibly be incorrect.[2]

In an effort to determine if there were any difference in attention value of a full page advertisement in a large size publication and in the smaller sized publications, Cutter prepared two sets of dummy magazines with several advertisements from the two publications, Saturday Evening Post and Literary Digest. He used only full page advertisements from both magazines. The magazine advertisements were identical in every way except size. By means of two tests, a recall test and a recognition test he found the following results:

Size	Recalls	Recognition	Memory Coefficient
Large	53	81	67
Small	51	81	66

He concludes that these differences are so small that one page is the same as another page provided it is neither too small to be easily read nor too large to be handled easily. An advertisement in a publication having a page size of 680 lines will have little or no advantage over the same advertisement in a publication having a page size of 450 lines. Though the space ratio of these two sizes is 155 to 100 the attention value

1. Adams, H. F. and Dandison, B. Attention Value of Size and Repetition. Journal of Applied Psychology. Dec. 1927. p. 483.
2. Adams, H. F. Advertising and Its Mental Laws. p. 106.

is about the same.[1]

From a test somewhat similar to the above, Newhall and Heim concluded: "Within our experimental limitations, the results seem to indicate that retention of magazine advertisements is independent of their absolute size."[2]

Gallup, through the use of the recognition test, found the following ratios:

	two page	one page	half page	quarter page
Attention values	140	100	49	27.7
Space ratios	200	100	50	25.0

In this test interviewers were sent to a number of towns along the Atlantic coast and in the North Central states, where they asked 3789 readers (1941 men and 1848 women) to leaf through a copy of a magazine and indicate each advertisement they had seen or read. Of course, this method would work somewhat against the larger magazines because of their length, but in spite of this obstacle the test is quite significant. The obstacle would be one only in considering one magazine against another and not in considering one size advertisement against another size in the same medium. Furthermore, the test was made on a large number of people of both sexes and of all occupations. In both of the following cases the full page attention value is taken as 100 and the other sizes measured in relation to it.

SATURDAY EVENING POST

	two page	one page	half page	quarter page
Ratio of attention for men	140.7	100	43.8	32.0
Ratio of attention for women	146.0	100	73.7	31.0
Space ratios	200.0	100	50.0	25.0

These results show an increase in attention value with an increase in size but this increase is not proportional. Furthermore, it shows that in case of half page and two page sizes the attention value to women is somewhat more than to men.

1. Cutter, T. H. Page Size in Advertising. Journal of Applied Psychology. October 1930. p. 468.
2. Newhall S.M. and Heim, M. H. Memory Value of Size in Advertising. Journal of Applied Psychology. Feb. 1929. p. 75.

COLLIERS

	two page	one page	half page	quarter page
Ratio of attention value for men	138.8	100	54	27.6
Ratio of attention value for women	124.0	100	43.5	23.0
Ratios of space	200.0	100	50	25.0

These results show some difference in attention values as sizes and also differences between the sexes and differences between the publications.[1]

With a pure recall test, Scott, testing over 500 people located in various parts of the country, found that the full page received an average of 19.6 recalls while the half page received 9.2 and the quarter page only 3 recalls. Using the results of the full page as an index of 100 the ratios of 100-46-16 are obtained. The space ratios for these are, of course, 100-50-25.[2]

Scott made another test with a dummy magazine, submitting the dummy to 50 people. On the average the full page was recalled 6.5 times, the half page 2.67 times and the quarter page 1 time. Letting the results of the full page be an index of 100 this would give the ratios of 100-41.1-15.4. The results of a recognition test conducted at the same time, were: 12.5 recognitions for the full page, 8 for the half page and 3.5 for the quarter page. This gives ratios of 100-64-28. In analyzing the results of these tests, Scott concluded that the larger sizes, other things being equal, have a more than proportional advantage in recall values but a less than proportional advantage in recognition values. He said that his test indicated a very great difference between individual advertisements of the same size; that certain styles of advertisements (depending on the kind of product advertised and other factors) are effective in size and others are worthless even for the full page space.[3]

Starch made a recognition test in which he asked 142 people to look through some magazine they said they had read recently and point out the ad-

1. Gallup, George. Survey of Reader Interest in Saturday Evening Post Liberty, Colliers. p. 27.
2. Scott. W. D. Psychology in Advertising. p. 297.
3. Ibid., p. 299.

the advertisements they recognized as having been seen. After giving the full page an index of 100, he concluded that the double page would have a value of 155, two thirds page 68, half page 36, third page 30 quarter page 21.[1]

In a recall test conducted on the same 142 people, Starch found that the two page advertisement had a value of 161 (based on page value of 100) two thirds page 45, half page 9, third page 23, quarter page 17.

In a recognition test, Strong canvassed a large number of people asking them if they had read the current issue of the Saturday Evening Post. Those who had read it were then given a pile of advertisements containing all the advertisements which had appeared in the Saturday Evening Post that week, and an equal number of advertisements that had appeared in the magazine about a year previous to that time. The individuals were instructed to look through the pile and pick out the advertisements they had seen in that week's Post. His results were: two page 149, one page100, half page 81, and quarter page 57.[2]

Hotchkiss and Franken conducted another test somewhat similar to that above. Their results were very close to those of Strong: two page 147, full page 100, half page 71, quarter page 47. Both this test and that of Strong are free from the criticism regarding artificiality of conditions. In these tests the subjects were men and women of all walks of life and had previously read the magazine under normal conditions.[3]

HISTORICAL TESTS

Through the use of the historical method, Scott, using the Century Magazine, found the average size of advertisement increased from 38 agate lines in 1872 to 169 in 1913.[4] Starch, using the same method, found that the average size of advertisement in the Literary Digest increased from

1. Starch, Daniel, Principles of Advertising, p. 560.
2. Strong, E. K. Journ. Exper. Psychol., 1916, I, pp. 319 ff.
3. Hotchkiss, G. B. and Franken, R. Bureau of Business Research. N.Y.U. 1920.
4. Scott, W. D. op. cit., p. 183.

approximately three column inches in 1895 to 20 column inches in 1921, and that the percentage of full page advertisements in the Ladies Home Journal increased from 18% in 1906 to 72% in 1921. The author, continuing this study, found that there was a decrease in percentage of full page advertisements in the Literary Digest from 58% in 1921 to 47% in 1931, and that there was a decrease in percentage of full page advertisements in the Ladies Home Journal from 36% in 1923 to approximately 25% in 1932. It is probable that the author's method of checking was not the same as that of Scott.[1]

Starch assigns the following reasons for the increase in size in the last half century:[2]

1. Competition and imitation...some advertisers wanted to dominate the space; so they increased their space from a quarter page to a half page. The competitors then start to imitate, and so the ball is started to rolling.

2. Possibly large space is more effective. While the experiments have not been consistent, they have generally proved that the larger spaces are somewhat better as an attention device.

3. There are more commodities which need the use of large space than there were fifty years ago.

4. Business as a whole is conducted on a larger scale now. The larger business concerns are in a better financial position to use large space.

Coupon Tests

Starch, in his analysis of some three million coupon inquiries, found the following relationship between size and inquiries.: giving the full page an index of 100 the half page would have index of 53.5 and quarter page 31.9.

In another coupon test, Starch concludes that the effect of advertisements, other things being equal, is approximately directly proportional to

1. Starch, Daniel. op. cit., p. 541.
2. Ibid., p. 542.

the size of the page used. In terms of a fraction of a page this did not hold true. The third of a page(33.3% in size) pulled 38% of the replies in relation to a full page. This shows a ratio of 114 to 100 in favor of the smaller size. The seventh page pulled an even greater number of replies proportionally. Though only 14.3% in size it pulled nearly 23% as many replies as did the full page. This shows a ratio of 161 to 100 in favor of the smaller size.[1]

Using advertisements covering a period of 14 years, Falk computed the seasonal weight of the advertisements and found that in his case advertisements in certain months greatly outpulled those in other months. Thus he was able to draw up a chart showing the relative number of inquiries an advertisement in January would bring in comparison to some other month, say in June. By calculations which are rather hard to explain, Falk determined his costs (in percentages) for the most common sizes of advertisements. These are shown below:

	.....Cost ratios.....		
Space ratios	State Farm Papers	Nat'l Farm Papers	Gen. Magazines
200	160		
100	100	100	100
50	83	65	55
25	65	48	43

As stated above these figures show the costs of the advertisements. When translated into ratios of effectiveness the results of the general magazines show: full page 100, half page 45.4, and quarter page 14.5. Two half pages would cost 2 x 55 or 110. Therefore they are not as effective as one full page, since it costs only 100. If a full page has a pulling power value of 100 then two half pages will have a value of only 90.8. (This is found by the equation x:50::100:110 x is 45.4 In a like manner the quarter page is found to be 14.5. 4x43 is 172 x;25::100:172 x is 14.5) Link says of this work, "Because of its limited scope and smaller number of variables

1. Starch, Daniel. Analysis of 5,000,000 Inquiries.

and the better control that can be exercised when variables are limited this study represents a result of great significance."[1] This research is probably the most thorough of its kind ever made. The results are not based on averages except that they apply to the specific company, the Gorgon Van Tine Co. Probably this is the most reliable kind of coupon inquiry test that can be made.[2]

Eye Fixations Tests

One of the most direct laboratory studies of attention value is that made by Nixon. In his experiment he used the eye fixation method.[3] Advertisements were presented in such a way that two advertisements, one a full page and the other a half page in size, were shown to the subject simultaneously. The experimenter was concealed behind a screen so that the subjects would not realize that this was a test. He observed which advertisements the subject looked at first (or fixated first). He also recorded the time spent on each of the advertisements during the first ten seconds of observation, and during the first thirty seconds. He concluded that the relative attention values for full and half page advertisements were as follows: (full page is given an index of 100)

	Full page	Half page
First fixations	100	86
Time 10 seconds	100	81
Time 30 seconds	100	74

Immediately after the eye movement test a pure recall test was performed. The result of this was a ratio of 100 to 47. This would seem to show that the full page advertisement is almost twice as valuable in memory value as it is in pure attention value. However, Nixon recognizes the seeming inconsistency here. He says, "The divergence in the case of

1. Link, H. C. op. cit., p. 112.
2. Falk, A. T. Analyzing Advertising Results. Harvard Business Review. April 1929. p. 315.
3. For a more complete description of this method see pages 56ff

memory is probably to be explained on the basis assumed by several previous investigators, namely, that national advertisers tend to use full page material and the full page advertisements tend to be more familiar."[1] Nixon concludes that the "ratios for the influence of space when the total times of fixation are considered are close enough to make that part of the experiment a confirmation of the square root law."[2]

The author has conducted four minor experiments relative to size. A more complete report of these experiments is given later in this paper. The results of these tests are:

Space ratios	380	260	200	150	100
Indices of attention	181	162.7	142.8	127.1	100

The larger sizes are shown here in relation to the smaller sizes. If one finds the ratio of the small sizes to the large sizes (this is done as follows: 100:380::x:100 x is 26.3 150:380::x:100 x is 39.4 etc.) the following results are obtained:

Space ratios	100	68.4	57.9	39.4	26.3
Indices of attention	100	89.9	78.9	70.3	55.5

These space ratios are fairly close to those of the quarter page, third page, half page, two thirds page and full page. By process of simple mathematical calculation the space ratios can be made to conform to the magazine space ratios of 100 - 66.7 - 50 - 33.3 - 25 (using the full page as a basis with a value of 100.) This is done as follows: 66.7 : 68.4 ::x:89.9 x is 87.6. 50:57.9::x:78.9 x is 68.1 etc. Thus the following ratios are obtained:

Space ratios	100	66.7	50.0	33.3	25.0
Indices of attention	100	87.6	68.1	59.6	52.7

It is,however, questionable whether it is mathematically correct to do this;

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1. Nixon, H. K. Attention and Interest in Advertising. p. 50.
2. Ibid., p. 50.

so the author does not offer these tests as conclusive.

It is very hard to deduce any worth-while conclusions from the complex mass of data shown here. The results of the tests are radically different in some cases. This might, in part, be explained by the fact that different methods were used in the tests. However, it would by no means explain the wide differences in tests of the same character by different experimenters or by the same man at different times.

The value of the quarter page varies all the way from the recall test by Scott, which gave it a value of 16 to the recognition test by Strong which gave it a value of 57. On a basis of 100 this would show a range of results from 100 to 350. The half page is even worse in its range. It varies from 9 in the recognition test by Starch to 86 in the fixation test by Nixon. This shows a range of from 100 to 955. This range is so wide that it is doubtful if one should use the results at all. The two page data are the only results that have any degree of conformity. The extremes in this case are 131 in the recall test by Starch and 157 in the recognition test by Starch. This shows a range of 100 to 119.

Thirty years ago Adams combined the work that had been done by others relative to size and tried to draw an average. He combined the ratios obtained by Scott, Starch, Strong, and Adams in eleven different experiments to obtain the ratios of 100-61-41 for the full, half and quarter pages.

The author has tried to average all these tests with a view that the average of the many tests might be more reliable than the results of any one test by itself. However, it is doubtful if the average is worthwhile since there is such a large average deviation. The averages obtained from the table on the following page seem to point to the superiority of the small-

er sizes. On the basis of these averages (if all sizes are measured in relation to the two page size) the following values are obtained: one two page advertisement 147, two one page advertisements 200, four half page advertisements 222, and eight quarter pages 252.4. In other words, 8 quarter pages will have much more attention value than the same amount of space used as a double page. The ratio of 252.4 to 147 is 171 to 100. That means space used in smaller sizes is 71% more effective in attention value than when used as a two page advertisement.

Table 1 Showing Summary of Attention Values of Size

Experimenter	Type of test	two page	one page	half	quarter
Adams	Recall		100	48	36
Adams and Dandison	Recall		100	50	32
Austin	Fixation		100	68	53
Falk	Coupon inquiry		100	46	15
Gallup	Recognition	140	100	49	28
Hotchkiss and Franken	Recognition	147	100	71	47
Nixon	Fixation 30 seconds		100	74	
Nixon	Fixation 10 seconds		100	81	
Nixon	Recall		100	47	
Scott	Recall		100	47	16
Scott	Recall		100	42	15
Scott	Recognition		100	64	28
Starch	Coupon inquiry		100	53	32
Starch	Recall	161	100	9	17
Starch	Recognition	155	100	36	21
Starch	Recognition	131	100	55	31
Strong	Recognition	149	100	81	57
Strong	Recognition		100	65	46
Averages for all recognition tests		144	100	60	37
Averages for all recall tests		161	100	40	23
Averages for all tests		147	100	55.3	31.7
Space ratios		200	100	50	25

There seem to be only two valid conclusions that can be drawn from these data, and even these conclusions cannot be stated in specific terms but have to be couched in rather general terminology. The conclusions are:

1. Large space seems to have more attention value than small space;

that is, a large advertisement is more likely to be seen than a small one.

2. There seems to be a kind of lag in the relative attention values as the size increases. This points to the superiority of the smaller sizes in so far as cost per unit of attention is concerned.

From examination of magnitude tests, Poffenberger draws the conclusion that "the more one departs from the measurement of mere attention, by the addition of such factors as memory, prestige, location, previous familiarity, and so forth, the more does the large space increase in proportion to the small."[1]

An advertiser cannot afford to neglect such factors as those mentioned above, and he must also consider the impression he wishes to make, the nature of the article, the nature and size of the competitor's advertisements, and other elements in order to be able to select the most economical size for his advertisements.

POSITION

A second determinant of attention is position. While position might mean a number of things, such as position on the page, position in the medium, left or right hand page and others, the writer will examine this determinant from the standpoint of right hand vs left hand pages.

A number of tests have been made on this question, and the result is very much like the result of the size tests, a great confusion. There are two reasonings as to which side is the more valuable and why. Those who uphold the left side say that it has greater attention value because our reading habits force us to begin at the upper left: so that the first place one's interest would fall would be on the upper left hand side of the

1. Poffenberger, A. T. Psychology in Advertising. (Rev. Ed.) p. 199.

left hand page. Those whose tests have proven that the right hand page is superior explain it in this way; in turning the pages of a magazine the right hand page comes into view first; hence, in general, the right is more valuable than the left.

Hotchkiss and Franken[1] obtained mixed results from a recognition test given to students. For certain advertisements (colored page, black and white page and quarter page) they concluded that the advantage lay with the right while for the one half page, in their test, the advantage is on the left. However, in this test the experimenters seemingly made no effort to control the other attention factors, such as color, illustrations etc. Their results are shown below: (expressed in ratio form, left given index of 100)

	left	right
colored page	100	109.2
uncolored page	100	107.8
half page	100	91.2
quarter page	100	112.8
averages	100	105.2

Adams prepared copies of a magazine in such a way that the same advertisements were half of the time on the left and half of the time on the right hand page. Subjects were allowed to look through these magazines for 15 minutes and then reported what they had seen. Adams concluded that the right hand page was almost twice as strong as the left in attention value. The ratio was 100 to 57.2 right to left. The ratio for left to right (giving left an index of 100) would be 100 to 174.8[2]

Nixon, in his eye movement test, prepared a dummy magazine which had 44 right and the same number of left hand pages, all advertisements being of the same size. The advertisements were selected in such a way that each side had the same number of colored advertisements and the same number of those possessing pictures of people. Subjects then were

1. Poffenberger, A. T. op. cit., (1925 ed.) p. 243.
2. Adams, Henry. Advertising and its Mental Laws. pp. 89 ff.

asked to examine the dummy magazine while the investigator observed their eye movements. In case of first fixations the results are as follows:

left 33.73 first fixations out of a possible 44
right 10.26 first fixations out of a possible 44

This shows a ratio of 327 to 100 favoring the left hand page.[1]

In another test, a recall test, Nixon found that the left hand page received an average of 4.7 recalls and the right hand page an average of 3.33 recalls. This shows a ratio of 139 to 100 favoring the left.

Nixon also measured the maount of time spent during the first 10 seconds of observation and found that the ratio (left to right) was 220 to 100. During the first thirty seconds the ratio decreased to one of 119 to 100.

In a somewhat similar test conducted by the author,[2] the following results were obtained (expressed in ratios):

	left	right
number of first fixations	200	100
time spent out of 30 seconds	101.5	100
Number of fixations	105	100
recall value	101.7	100

In his analysis of 5,000,000 coupons, Starch found that the right hand page seems to be stronger. His ratios were:

size of advertisement	left	right
full page	100	104
half page	100	114

In a test very similar to that of Hotchkiss and Franken, Strong found the values to be so nearly the same that he concluded the difference between pages is negligible. The ratio, left to right, was 100 to 100.8[3]

Of course, it is possible that the magazine and newspaper pages do not have the same conditions governing, and so would not be comparable. So far as the author knows, however, no tests have been made to prove

1. Nixon, H. K. op. cit., p. 41.
2. For more detail see pp. 56 - 81
3. Poffenberger, A. T. op. cit., (Rev. ed.) p. 244.

whether this is true of not. The results of five tests made on newspapers show that the right is superior to the left hand page.

newspaper	experimenter	left	right
New York Times	Strong	100	130
New York Times	Roberts	100	106
New York Times	Franken	100	103
Morning World8	Hough	100	114
New York Tribune		100	104
averages		100	110.4

Poffenberger says that "a recent direct observation of reading habits of men and women in trains and waiting rooms while reading newspapers, shows a distinct superiority of the left hand page over the right hand page. Of 4400 persons observed, 3013 looked at the left hand pages before right hand pages; while 1387 did the reverse."[1]

CONCLUSIONS

It is difficult to draw any conclusions from this mass of data, since there are about as many tests proving one side stronger as there are tests supporting the other side. The author's own tests prove that the left hand side is considerably stronger for a momentary duration, but this advantage seems to disappear quickly.

Conclusions relating to the relative values of the left and right hand pages will not hold if the attention value of the content of the advertisements used in the tests is not approximately the same. Even though one side be inherently stronger than the other, it is very probable that a poorly placed advertisement may sometimes be more effective than one more effectively placed, but lacking in other attention features.

By getting an average of all these tests, the author finds that there is a slight advantage for the left hand side. This advantage, however,

1. Ibid., p. 244.

must be taken with a grain of salt, since there is such a wide variation in the different results. Then too, the efficacy of the average is doubtful due to the number of different kinds of tests included. The lowest weight for the right hand side is obtained in the test by Nixon (first fixations). The highest value was obtained by Adams (recall test). This shows a range of results from 30.5 to 174.8 (on a scale of 100 this would be 100 to 569). Even when similar tests are used, a wide difference is still seen. Nixon's recall test gave the right side a weight of 71.9, while Adams recall test gave the same side a weight of 174.8. This shows a range of from 100 to 243. Although the average pointed to the superiority of the left hand side, ten out of eighteen tests favored the other side. As stated above, there is so much difference in these data that it is almost impossible to draw any worthwhile conclusions from them.

Table 2 Summarizing Results of Position Tests

Experimenter	Type of Test	Left	Right
Adams	recall	100	174.8
Adams	recall	100	153.0
Austin	time spent 30 seconds	100	98.7
Austin	first fixations	100	50.0
Austin	number of fixations	100	95.2
Franken	newspapers	100	103.0
Hotchkiss and Franken	recognition	100	107.7
Hough	newspapers	100	114.0
	test in N.Y. Tribune	100	104.0
Nixon	recall	100	71.9
Nixon	time spent 10 seconds	100	45.4
Nixon	time spent 30 seconds	100	84.0
Nixon	first fixations	100	30.5
Poffenberger	direct observation	100	46.0
Roberts	newspaper	100	106.0
Starch	coupon inquiry	100	104.0
Strong	recognition	100	100.8
Strong	newspaper	100	130.0
Averages		100	95.6

This average of 95.6 has a standard deviation of 38.44 and a probable error of 6.48. These are so high that the ratio 100-95.6 is questionable.

COLOR

Gale, as early as 1900, made a number of laboratory tests to determine the attention value of color. He made brief expostres of colors on white backgrounds in order to determine which ones were noticed most frequently. He found that red was strongest in attention value among women and black was strongest among men. The average gave red first place and black second. However, this test was made on only 9 men and 7 women. Due to this small number of subjects the reliability of the results is doubtful.[1]

A tabulation, made by Boardman, of the number of colored pages in Sears Roebuck Company's catalog showed an increase in the percentage of colored pages from 2.8% in 1909 to 10.1% in 1922.[2]

Kitson, through the use of the historical method, made a tabulation of four magazines; namely, American, Colliers, Ladies Home Journal, and Country Life. From 1905 to 1920 the percentage of color increased from 1.1% of the full page advertisements to 20.2% of the full pages.[3]

A group of advertisers was asked whether the use of color was justified. 80% of them said it was; 5% said it was not; the remaining 15% gave no accurate answers. Those who answered that it was worthwhile cited results showing that colored advertisements ranged from 30% to 300% greater in sales pulling power than black and white advertisements of the same size, kind of appeal,etc.

Starch cites certain cases in which, in a test of the pulling power of color, a colored mail order advertisement pulled 15 times as many sales as the black and white page advertisement of the same article in another part of the catalog.[4]

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1. Gale, Harlow. University of Minnesota, Studies in Psychology.
2. Starch, Daniel. Principles of Advertising. 1923. p. 582
3. Ibid., p. 580
4. Ibid., pp. 581 ff.

Many experiments have been made in an effort to determine the relative attention value of colored and uncolored pages in advertising. The results of these tests are much like the results of those tests on size frequently confusing, complex, and complicating. The difficulty is probably that they confuse memory value and attention value. Although similar, these are not identical.

Hotchkiss, in a laboratory test with the Saturday Evening Post, found that a colored full page advertisement was 13% greater in attention value than an uncolored one. Of course, the ratio here would be 113 to 100. However, according to this test, the uncolored double page was stronger than the colored double page (ratio of 147 to 112). There is some discrepancy in this test, the effect of which can readily be seen. The colored double page advertisement, when measured against the colored full page was not as strong as the latter in attention value (ratio of 112 to 113). This seems highly improbable and offers grounds for discounting the test.[1]

In his eye fixation test, Nixon found that there was scarcely any attention value difference in matching color against black and white. For the first fixations the percentages were 52.5 for color and 47.5 for black and white. This shows a ratio of 115.2 to 100. However, during the first 10 seconds of observation the ratio changed to 102 to 100. During the next 20 seconds the ratio changed again. This time it stood at 98 to 100 favoring the uncolored advertisements. This margin of advantage that color seems to have is so small that it is discouraging in view of the fact that the colored page costs anywhere from 20% to 50% more than the uncolored page. Nixon draws this conclusion: "It seems probable from this that colored advertisements attract attention somewhat strongly for a very brief period,

1. Hotchkiss, G. B. and Franken, R. Attention Value of Advertisements. Bulletin Graduate School of Business Administration. N.Y.U. 1920.

after which color as an interest and attention factor ceases to exert any marked influence."[1]

According to Rheinstrom, describing the Gallup Report, color increases attention value for men 34% and for women 79% over black and white average for women.[2]

Barkley, using a recall test, found that a colored advertisement of full page size in the front of a magazine was 1.86 times as effective as the uncolored advertisement in the same section; and the colored advertisement was 1.22 times as effective as the uncolored advertisement of the same size and character when both were located in the back of the magazine.[3]

Gilbert, using a recall test, found that colored advertisements received 44% more recalls than did uncolored advertisements.[4]

In his "Analysis", Starch found that colored advertisements brought in 53% more replies on the average than did uncolored advertisements of similar size and character. Starch volunteers t at this is probably due to the fact that color is so effectively used in portraying the product in its natural appearance, rather than its superior strength as an attention agent.[5]

CONCLUSIONS

Experiments proving or disproving the theory that color increases the attention value have been few when compared to the mass of data relative to size of advertisements. Because of this reason and because the author has no (or relatively little) first hand test evidence to offer in support

1. Nixon, H. K. op. cit., p. 54.
2. Rheinstrom, Carrol. Gallup Report. Printers Ink Weekly, Mar.24.1932. p.70.
3. Barkley, K. L. Efficiencies of Advertisements. Journal of Applied Psychology. Feb. 1932 p. 74.
4. Gilbert, H. N. Experiment with Colored and Uncolored Advertisements. Journal of Applied Psychology. Feb. 1933. p. 49.
5. Starch, Daniel. Analysis of 5,000,000 Coupon Inquiries.

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of a conclusion, he finds it difficult to draw a worthwhile one. It is the popular conception that color does tend to increase the attention value remarkably, but the conflicting material seems to make this idea questionable. A number of things might tend to account for some of the differences in the test results. It is quite probably true that advertisements possessing one color only, when weighed against uncolored advertisements, would not have the same results as the same advertisement if it is in three or four colors. Then again, the kind of color will be significant. Blue letters offer more legibility when on a grey background than when on a black background.[1] Legibility probably has an important influence on attention value. The author is inclined to accept the conclusion of Nixon, "Color ceases to exert any marked influence on attention after a very brief period."

REPETITION

Repetition is another of the elements of attention. Not a great deal of test material is available relating to this particular attention factor. Probably Adams has done more laboratory work than any other in trying to determine the attention value of repetition. The popular idea about repetition is well expressed in the following quotation: "The intensity of the impression made by any one advertisement is not likely to carry on for a long and indefinite period. It requires frequent repeating of the appeal preferably with a high degree of continuity in the advertisements, actually to gain entrance into the daily affairs of the prospective customers."[2]

In a recall test made by Adams the following results were obtained:

	Number of appearances			
Effect	1	2	3	4
Cumulative effect	100	196	269	336
Effect per appearance	100	96	73	67

1. Summer, F. C. Influence of Color on Legibility of Copy. Journal of Applied Psychology. April 1932. p. 201.
2. Lucas, D. B. and Benson, C. E. Psychology for Advertisers. p. 294.

From these results is seen the fact that attention increases with an increase in the number of appearances, but that the attention value of each repetition decreases slightly.[1]

The same investigator, in another recall test, this time using actual advertisements, found the following:[2]

	Number of appearances			
Effect	1	2	3	4
cumulative effect	100	149		260
effect per appearance	100	49		111

In this case the lag is even more apparent than in the preceding case. It is apparent that four appearances of the same advertisement are not worth as much as the single appearance of four different advertisements (value of 260 for repetitions and 4 x 100 or 400 for the four different advertisements).

In a third test by Adams, different advertisements of the same firm were used instead of exact duplicates. This test shows:[3]

	Number of appearances		
Effect	1	2	4
cumulative effect	100	263	405
effect per appearance	100	163	142

This test shows an actual increase in attention value through the use of repetition. The fourth appearance does not give as much increased value as the second appearance, but, even so, four appearances are more valuable than showing of four entirely different advertisements. Poffenberger explains this as follows: "Some of the effect may be the result of the fact that the modification in advertising may attract a portion of the group of subjects that remained unaffected by an earlier presentation."[4]

Strong made a recognition test and obtained thefollowing:

	Number of appearances		
Size of advertisement	1	2	4
fourth page	100	122	173
half page	100	126	153
full page	100	124	158
Average effect	100	124	161

1. Adams, H. F. op. cit., p. 110.
2. Ibid., p. 235.
3. Ibid., p. 240.
4. Poffenberger, A. T. op. cit., (1925 ed.) p. 211.

Strong concluded: "There is no appreciable difference between one fourth page, one half page, or one page as far as relative increase or permanent impression is concerned due to repetition. In other words, repetition increases the value of one presentation of the three sized advertisements in the same way by adding one fourth more with the second presentation and two thirds more with three more presentations."[1]

In a more recent test Adams concluded: "Repetition is effective, but when we contrast originals with an original plus one or more repetitions we find that repetition has an inhibitive effect, amounting to about 40% for one repetition, 57% for two repetitions, and 64% for three repetitions, the ratios for 1, 2, and 4 appearances being 100, 120, and 145 respectively."[2] The results of this test are fairly close to those of the test by Strong mentioned above.

In two tests, a recall test and a recognition test, Adams and Dandison found the following results:

Appearance	Average recalls	Average recognitions
1	2.6	6.2
2	4.3	9.2
3	4.6	9.3
4	5.1	9.7
5	4.8	9.5
6	5.6	9.5
7	5.6	9.1
8	6.2	9.5

Two interesting conclusions may be drawn from these data:

1. The advertisements received, on the average, as many recognitions on the first appearance as they did recalls on the eighth appearance.

2. The data show an almost steady increase in the number of recalls with successive appearances, but after the second appearance the recognition

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1. Strong, E. K. Psychological Review, 1914, XXL, p. 136.
2. Adams, H. F. Memory Affected by Repetition. Journal of Applied Psychology. Feb. 1927 p. 25.

value remained about the same with each successive appearance.[1]

In a test by Munsterberg, the investigator concluded: "Hence we come to the results that the 4 times repeated quarter page advertisement has about one and a half times stronger memory value than one offering of a full page, or the two times repeated half page, but this relation does not grow with the reduction of space."[2]

CONCLUSIONS

It is difficult to draw any good conclusions about repetition because of the meager bit of experimental evidence. These conclusions that can be drawn, whether worthwhile or not, are shown here:

1. In general, successive repetitions of identical advertisements have a decreasing attention value.

2. Where repetitions cover the same group of people, the larger sizes of advertisements have the advantage over smaller sizes repeated.

3. The ratio of increase in attention value due to presenting an advertisement more than once is about the same for one size as for any other size.

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1. Adams, H. F. and Dandison, B. Journal of Applied Psychology loc. cit., Dec. 1927, p. 483.
2. Munsterberg, Hugo. Psychology and Industrial Efficiency. p. 258.

CHAPTER IV

A VISUAL FIXATION LABORATORY TEST

The author has performed two visual fixation tests. One of these was an almost entirely new type of test. A report of these is found in this and the next chapter of this paper. The visual fixation, or eye movement, test is based on the principle that "when a person is free to guide his attention where he pleases, it will probably follow the line of his interests. When the eye falls upon an item, it will be voluntarily read or rejected according to how it appeals."[1] This is not exactly the condition since the subjects were presented with two advertisements at the same time, and were told to look at them. However, the principle above stated would be true as between the two advertisements. It might better be stated thus: "When two objects are presented to the view of a subject, and he is told to look at them as he sees fit, his gaze will probably follow the line of his interests."

The experimenter first prepared a series of cardboards, 19 in all, 11½ by 14 inches in size. This size is slightly larger than a page of the Saturday Evening Post. On each of these cardboards were placed two advertisements side by side. Some of the advertisements were the same ones which had been used in the fixation test conducted sometime previous to this time (a report of which is found in the succeeding chapter.) The coupon pulling power of those advertisements used in the previous test was known to the experimenter. However, an assistant who did practically all of the timing work did not know the results. Thus, there was little chance that his work was biased.

The 19 cardboards were placed face downward on a desk in front of the subject. The examiner sat directly in front of the subject at the opposite side of the desk. This position was taken in order that the examiner might

1. Lucas, D. B. and Benson, C. E. op. cit., p. 286.

clearly see the eye movements of the subjects.

The examiner was equipped with two stop watches, one of which was used to count off 30 seconds, the other to determine the length of time spent in the fixation of one of the advertisements. Subtracting this time from the 30 seconds would, of course, give the time spent on the other advertisement. The time of reading for each pair of advertisements was set at a half minute so that each pair of advertisements would have an equal opportunity. The half minute was an arbitrarily chosen amount of time. It could just as easily have been 45 seconds or one minute. This is, of course, not a normal condition of casual reading, and while, in a way, this may be said to indicate a limitation of the laboratory method, at the same time it will serve to show the fairness as compared with uncontrolled conditions.

Before the test the subject was furnished with these simple instructions: "Before you are some cardboards. On the under side of each cardboard are two advertisements side by side. The top of the advertisement is toward you; therefore, in order to see them, pull the cardboard toward you and turn it over by raising and pushing back the end next to you. The experimenter will allow you one half minute on each cardboard. At the end of this time he will say "time". You will then lay aside the cardboard and pick up the next one. While looking at the advertisements try to imagine yourself back in your home looking at a magazine. You may spend the 30 seconds reading either advertisement you wish, or it may be divided between the two. It is even possible that your attention may shift from one to another advertisement several times during the 30 seconds."

This method of raising and turning the advertisement was decided upon because in this way the pair of advertisements would come into view simul-

taneously; thus, there would be no constant error of the eye's fixating on the right hand advertisement because it happened to be the first one seen each time.

The experimenter, watching the eye movements, recorded three things:

1. which advertisement was first fixated
2. the amount of time spent out of 30 seconds on one advertisement
3. the number of times each advertisement was fixated.

This test was given to 100 subjects. This, of course, means that each cardboard was viewed 3000 seconds, and all 19 cardboards viewed 57,000 seconds. The 100 subjects were mostly students, men and women, at the Bowling Green Business University, Bowling Green, Kentucky. However, there were some business and professional men and women and housewives who acted as subjects. No effort was made to keep a record of the students separate from those of the business and professional men and women. However, the men's record was kept separate from that of women. This was done in order to find out if there were any noticeable sex differences in attention value.

For comparison andother purposes the 100 cases were divided into four groups of 25 each. For distinction these groups will be called groups I, II, III, and IV. After finishing with group II, the positions of the advertisements were reversed, that is, where Advertisement A had been on the left and B on the right, B is now on the left and A on the right. This was done in order to have a closer check on the position factor. In this way each advertisement was seen on the left hand side by 50 subjects and on the right hand side by the same number. Thus the position factor tended to equalize or cancel itself out. The result would be that if one advertisement consistently received a longer fixation period the experimenter would know that it

was not due to position, but to the strength of the advertisement itself.

From Table 3 it is seen that the total time spent on the left side was 28,687.1 seconds. This figure was slightly larger than the time spent on the right side (28,312.9). When these position figures are stated in terms of ratio, it is found that the left hand page has a superiority of 101.3 to 100. This difference is so small that one can say that after 30 seconds there seems to be no decidedly greater strength on either side. Although this difference is small, it is a significant difference. It is shown in the table that the mean difference is more than three times the standard deviation difference. Hepner says, "The difference between averages should be at least three times the standard deviation difference. if it is to be considered a significant difference."[1] Gavett says, "A difference of more than four times the standard deviation difference can scarcely happen by influence of chance alone."[2] Here the difference in averages is more than five times the S. D. difference.[3]

As stated above, the results of the men and women subjects were kept separate. The results of the time spent by men are shown in Table 4. It is seen that the total seconds spent on the left hand side are 19,191.8, and that the men spent 18,428.2 seconds on the right hand side. If these results are stated in terms of a ratio it is found that the left hand side is superior having a ratio of 104.1 to 100. This ratio is somewhat higher than that for men and women combined (101.3 to 100), and as shown on page of the Appendix it is a significant difference.

Table 5 shows the amount of time spent by women on each pair of advertisements. There were 34 women out of the 100 subjects who took this test. These were distributed as follows: Group I, 9; Group II, 6; Group III, 8;

1. Hepner, H. W. Psychology in Modern Business. p. 691.
2. Gavett, G. I. First Course in Statistical Method. p. 180.
3. See Appendix page

Table 3 Showing Total Time Spent on Left and Right (All Subjects)

Pair of Adv'ts Number	Group I Left	Group I Right	Group II Left	Group II Right	Group III Left	Group III Right	Group IV Left	Group IV Right
1	297.0	453.0	303.9	446.1	481.3	268.7	421.2	328.8
2	459.9	290.1	405.3	344.7	368.6	381.4	341.8	408.2
3	312.8	437.2	420.4	329.6	313.6	436.4	470.8	279.2
4	306.8	443.2	372.1	377.9	438.6	311.4	394.4	355.6
5	373.4	376.6	412.8	337.2	374.4	375.6	383.7	366.3
6	368.5	381.5	328.7	421.3	382.8	367.2	358.0	392.0
7	231.6	518.4	385.9	364.1	284.2	465.8	488.1	261.9
8	310.7	439.3	345.6	404.4	453.7	296.3	322.6	427.4
9	431.9	318.1	393.7	356.3	457.5	292.5	414.2	334.8
10	369.5	380.5	426.4	323.6	349.9	400.1	360.8	389.2
11	359.2	390.8	424.9	325.1	361.4	388.6	335.0	415.0
12	349.0	401.0	356.4	393.6	357.1	392.9	423.5	326.5
13	388.7	361.3	334.0	416.0	374.8	375.2	395.8	354.2
14	359.4	390.6	378.0	372.0	432.1	317.9	419.2	330.8
15	367.1	382.9	401.1	348.9	404.0	346.0	320.6	429.4
16	313.5	436.5	354.8	395.2	425.7	324.3	447.3	302.7
17	328.8	421.2	352.0	398.0	394.5	355.5	387.8	362.2
18	369.8	380.2	344.3	405.7	403.9	346.1	450.1	299.9
19	336.7	413.3	336.8	413.2	396.0	354.0	406.6	343.4
Totals	Left 6634.3		7077.1		7434.2		7541.5	
	Right 7615.7		7172.9		6815.8		6708.5	

Grand totals Left 28,687.1 Right 28,312.9

S. D. dis. 48.93 S. D. av. 5.61 S. D. diff. .9105
Mean left.... 377.4 Mean Right 372.6

Group IV, 11. Table 5 shows that 9,515.2 seconds were spent by the women in observing the left hand page and that 9864.8 seconds were spent by the women in observing the right hand page. This, when expressed in terms of a ratio, shows a superiority for the right hand page. The ratio is 96.7 to 100 (left to right). This difference is significant.[1]

It will be remembered that the men showed a rather decided preference for the left hand side (104.1 to 100), but that when the results of the women subjects were taken into consideration along with those of man the ratio dropped to 101.3 to 100. This ratio was shown to be a significant

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1. See Appendix page III

one. However, the chances are that it is significant only for a group of 100 subjects made up of 66 men and 34 women. Had there been as many women subjects as there were men (50 each) it is quite possible that the ratio would have been almost 100 to 100, that is, hardly any difference, or no difference at all between the strength of the left hand side and the right hand side. The author mentions this in passing so that the reader will accept 'with a grain of salt' the ratio of 101.3 to 100 favoring the left side.

Table 6 shows the record of first fixations, that is, a record of which

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TABLE 6 Showing Total Time (in seconds) Spent by Men

Pair of Adv'ts Number	Group I Left	Group I Right	Group II Left	Group II Right	Group III Left	Group III Right	Group IV Left	Group IV Right
1	165.6	314.4	237.3	332.7	319.3	190.7	235.3	184.7
2	293.5	186.5	324.3	245.7	257.1	252.9	200.4	219.6
3	192.2	287.6	344.3	225.7	221.1	288.9	268.9	151.1
4	191.4	288.6	285.7	284.3	311.6	198.4	213.6	206.4
5	234.0	246.0	326.2	243.8	252.7	257.3	228.4	191.6
6	226.7	253.3	260.9	309.1	273.5	236.5	221.5	198.5
7	149.0	331.0	302.6	267.4	205.0	305.0	273.7	146.3
8	188.2	291.8	282.1	287.9	335.6	174.4	139.6	280.4
9	302.1	177.9	332.0	238.0	267.8	242.2	251.1	168.9
10	247.3	232.7	339.5	230.5	224.2	285.8	204.0	216.0
11	242.4	237.6	333.3	236.7	219.4	290.6	214.9	205.1
12	203.4	276.6	271.2	298.8	238.9	271.1	242.3	177.7
13	235.2	244.8	265.2	304.8	274.5	235.5	240.1	179.9
14	223.6	256.4	300.7	269.3	291.3	218.7	253.3	166.7
15	240.4	239.6	333.4	236.6	261.3	248.7	147.6	272.4
16	217.2	262.8	298.1	271.9	267.2	242.7	252.1	167.9
17	201.6	278.4	296.1	273.9	255.6	254.4	213.9	206.1
18	236.5	243.5	261.5	308.5	278.3	231.7	253.1	166.9
19	229.5	250.5	266.4	303.6	265.8	244.2	237.1	182.9
Totals	Left 4219.8		5660.8		5030.3		4290.9	
	Right 4900.2		5169.2		4669.7		3689.1	
Grand totals			Left 19,191.8		Right 18,428.2			

S. D. dis. 51.33
S. D. av. 11.77
S. D. diff. 3.95
Mean diff. 41.2 which is more than 10 times the S. D. diff.

of the pair of advertisements the subjects looked at first. This table shows a total of 1267 first fixations on the left hand side and 633 first fixations on the right hand side. When put into ratio form, this shows slightly more than 200 to 100 in favor of the left hand side. On examination of these figures it will be seen that there are four groups with 19 pairs of advertisements (or 19 cases) in each group. In other words, there are 4 x 19 or 76 cases in all. Out of these 76 cases there are only 6 instances where the number of first fixations on the right exceeded those on the left. This, of course, makes 70 cases favorable to the left

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Table 5 Showing Total Time (in seconds) Spent by Women

Pair of Adv'ts Number	Group I		Group II		Group III		Group IV	
	Left	Right	Left	Right	Left	Right	Left	Right
1	131.4	138.6	66.6	113.4	162.0	78.0	185.9	144.1
2	166.4	103.6	81.0	99.0	111.5	128.5	141.4	188.6
3	120.6	148.4	76.1	103.9	92.5	147.5	201.9	128.1
4	115.4	154.6	86.4	93.6	127.0	113.0	180.8	149.2
5	139.4	130.6	86.6	93.4	121.7	118.3	155.3	174.7
6	141.8	128.2	67.8	112.2	109.3	130.7	136.5	193.5
7	82.6	187.4	83.3	96.7	79.2	160.8	214.4	115.6
8	122.5	147.5	63.5	116.5	118.1	121.9	183.0	147.0
9	129.8	140.2	61.7	118.3	189.7	50.3	163.1	166.9
10	122.2	147.8	86.9	93.1	125.7	114.3	156.8	173.2
11	116.8	153.2	91.6	88.4	142.0	98.0	120.1	209.9
12	145.6	124.4	85.2	94.8	118.2	121.8	181.2	148.8
13	153.5	116.5	68.8	111.2	100.3	139.7	155.7	174.3
14	135.8	134.2	77.3	102.7	140.8	99.2	165.9	164.1
15	126.7	143.3	67.7	112.3	142.7	97.3	173.0	157.0
16	96.3	173.7	56.7	123.3	158.4	81.6	195.2	134.8
17	127.2	142.8	55.9	124.1	138.9	101.1	173.9	156.1
18	133.3	136.7	82.2	97.2	125.6	114.4	197.0	133.0
19	107.2	162.8	70.4	109.6	130.2	109.8	169.5	160.5
Totals Left	2414.5		1416.3		2433.8		3250.6	
Totals Right	2715.5		2003.7		2126.2		3019.4	

Grand Totals Left 9515.2 Right 9864.8

S. D. dis. 26.76 Mean for Left 519
S. D. av. 6.14 Mean for Right 500
S. D. diff. 1.99 Mean diff. 19 which is 9 times S.D.diff.

hand side. If one could use these figures, the ratio would be 1166 to 100.

It will be remembered that after the first two groups had been tested the positions of the advertisements were reversed. Thus the advertisements which were on the left in Group I were also in the following positions: Group II left, Group III right, and Group IV right. The total of Group I left and Group II left is 624. This represents the total number of first fixations received by those advertisements on the left side in these first two groups. When these advertisements were shifted to the right hand side the number of first fixations they received dropped to 307. The ratio, left to right, in Groups I and II was 624 to 326 or 191 to 100. The ratio, left

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Table 6 Showing First Fixations, Left and Right, For All Subjects

Pair of Adv'ts Number	Group I		Group II		Group III		GroupIV		Totals	
	Left	Right	Left	Right	Left	Right	Left	Right	Deft	Right
1	15	10	14	11	17	8	16	9	62	38
2	22	3	21	4	13	12	15	10	71	29
3	20	5	21	4	9	16	19	6	69	31
4	15	10	16	9	17	8	19	6	67	33
5	16	9	18	7	15	10	18	7	67	33
6	14	11	17	8	19	6	17	8	67	33
7	12	13	16	9	16	9	22	3	66	34
8	15	10	15	10	19	6	18	7	67	33
9	19	6	21	4	15	10	17	8	72	28
10	20	5	20	5	16	9	16	9	72	28
11	16	8	17	8	11	14	16	9	61	39
12	15	10	16	9	12	13	19	6	62	38
13	17	8	16	9	15	10	18	7	66	34
14	10	15	12	13	17	8	16	9	55	45
15	17	8	16	9	15	10	17	8	65	35
16	16	9	18	7	17	8	20	5	71	29
17	15	10	14	11	16	9	23	2	68	32
18	18	7	15	10	20	5	18	7	71	29
19	11	14	17	8	19	6	17	8	64	36
Totals	304	171	320	155	302	173	341	134	1267	633

S. D. dis. 4.25 Mean left 66.7
S. D. av. .98 Mean right 33.3
S. D. diff .3178 Mean diff. 33.4 which is more than 100 times S.D.diff

to right in Groups III and IV was 643 to 307 or 209 to 100. The ratio was thus increased somewhat by the shift in the position of the advertisements. This was evidently due tothe fact that the superior advertisements were mostly on the right hand side in Groups I and II and on the left hand side in Groups III and IV. This set of figures is quoted merely to show that while one side seems to be inherently stronger in attention value(first fixations) the advertisements themselves determine to a large extent the amount of attention they will secure.

Table 7 shows the number of first fixations made by men. The totals are 860 for the left side and 394 for the right hand side. This gives a ratio

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Table 7 Showing First Fixations, Left and Right, For Men

Pair of Adv'ts Number	Group I		Group II		Group III		Group IV		Totals	
	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
1	9	7	12	5	12	5	9	5	42	24
2	14	2	17	2	10	7	7	7	48	18
3	12	4	16	3	6	11	10	4	44	22
4	9	7	11	8	10	7	13	1	43	23
5	11	5	15	4	11	6	9	5	46	20
6	8	8	14	5	17	0	10	4	49	17
7	7	9	13	6	10	7	14	0	44	22
8	7	9	12	7	13	4	13	1	45	21
9	14	2	16	3	10	7	9	5	49	17
10	12	4	14	5	10	7	9	5	45	21
11	12	4	14	5	9	8	10	4	45	21
12	12	4	11	8	9	8	10	4	42	24
13	11	5	12	7	11	6	10	4	44	22
14	7	9	10	9	12	5	10	4	39	27
15	12	4	13	6	10	7	12	2	47	19
16	12	4	14	5	11	6	11	3	48	18
17	11	5	11	8	12	5	14	0	48	18
18	13	3	10	9	15	2	9	5	47	19
19	7	9	14	5	14	3	10	4	45	21
Totals	200	104	249	112	212	111	199	67	860	394

S. D. dis. 2.59 Mean Left 45.2
S. D. av. .59 Mean Right 20.7
S. D. diff. .191 Mean diff. 24.5

of 218.2 to 100 in favor of the left. This ratio is somewhat larger than that for men and women combined.

The results for the first fixations of the women subjects are shown in Table 8. From this table it is seen that the total for the left is 407 and for the right is 239. This gives a ratio of 170.3 to 100 in favor of left. The difference between this ratio and that of men is 47.9. When this figure is divided by the ratio for women (170.3) it is found that the left hand side is some 28% greater in attention value for men than it is for women. It will be remembered that the table showing time spent during 30 seconds showed that the left hand side was stronger for men than women.

In the case of the men the ratio, left to right dropped, during the

Table 8 Showing First Fixations, Left and Right, for Women

Pair of Adv'ts Number	Group I Left	Group I Right	Group II Left	Group II Right	Group III Left	Group III Right	Group IV Left	Group IV Right	Totals Left	Totals Right
1	6	3	2	4	5	3	7	4	20	14
2	8	1	4	2	3	5	8	3	23	11
3	8	1	5	1	3	5	9	2	25	9
4	6	3	5	1	7	1	6	5	24	10
5	5	4	3	3	6	2	9	2	23	11
6	6	3	3	3	4	4	7	4	20	14
7	5	4	3	3	6	2	8	3	22	12
8	8	1	3	3	6	2	5	6	22	12
9	5	4	5	1	5	3	8	3	23	11
10	8	1	6	0	6	2	7	4	27	7
11	5	4	3	3	2	6	6	5	16	18
12	3	6	5	1	3	5	9	2	20	14
13	6	3	4	2	4	4	8	3	22	12
14	3	6	2	4	5	3	6	5	16	18
15	5	4	3	3	5	3	5	6	18	16
16	4	5	4	2	6	2	9	2	23	11
17	4	5	3	3	4	4	9	2	20	14
18	5	4	5	1	5	3	9	2	24	10
19	4	5	3	3	5	3	7	4	19	15
Totals	104	67	71	43	190	62	142	67	407	239

S. D. dis. 2.834 Mean left 21.4
S. D. av. .65 Mean right 12.6
S. D. diff. .667

first 30 seconds, from 218.2 to 100 down to 104.1 to 100. This shows a decrease of 114.1 which is 52.3% of the weight on the left hand side in first fixations (218.2). With women the ratio dropped from 170.3 to 100 down to the ratio of 96.7 to 100. This shows a difference of 73.6 which is 43.3% of the weight of the left hand side (170.3) in the case of first fixations. The ratio of the decrease in attention value for men to the decrease in attention value of the left hand side for women is 52.3 to 43.3 or 123 to 100. In other words, for men, during the first 30 seconds, the index of attention value of the left hand side decreased 23% more than did the index of attention value for women.

Table 9 Showing Number of Fixations, Left and Right, for All Subjects

Pair of Adv'ts Number	Group I		Group II		Group III		Group IV		Totals	
	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
1	56	61	50	51	43	44	61	51	210	207
2	56	49	51	43	53	53	48	49	209	194
3	51	57	53	45	46	52	55	47	205	201
4	59	56	51	50	49	47	58	49	217	202
5	54	56	50	44	47	46	55	49	206	195
6	56	57	44	48	52	51	49	47	201	203
7	47	53	45	42	58	59	48	38	198	192
8	50	49	35	36	46	43	47	39	178	167
9	60	54	45	45	56	52	68	60	229	211
10	57	56	49	49	52	52	45	43	203	200
11	49	49	49	49	52	50	52	45	202	193
12	51	48	43	43	53	56	55	48	202	195
13	56	51	44	44	53	53	46	42	199	190
14	56	56	55	55	58	59	68	63	237	233
15	56	55	49	49	55	53	40	40	200	197
16	53	57	47	45	54	53	51	48	205	203
17	60	58	52	49	51	50	59	49	222	206
18	54	51	41	41	50	42	50	44	195	178
19	56	57	49	42	53	46	54	45	212	190
Totals Left	1037		902		981		1010		3930	
Right	1030		870		961		896		3757	

S. D. dis. Left 12.63 Right 12.98 Mean Left 206.8
S. D. av Left 2.898 Right 2.978 Mean Right 197.7
S. D. diff. 1.015 Mean diff. 9.1

When averages per group are used S. D. diff. is .2396
Means are 51.7 for left and 49.4 for right with difference of 2.3
Thus the resulting differences above are significant

NUMBER OF FIXATIONS

Table 9 shows the number of fixations for all subjects. The totals show 3930 fixations on the left and 3757 fixations on the right hand side. This gives a ratio of 104.6 to 100 in favor of the left hand side. Dividing these totals by 1900 (100 subjects times 19 advertisement pairs) averages of 2.07 fixations per person for the left and 1.98 per person per advertisement for the right are found. However, the S. D. Diff. is so large in this case that the 104.6 to 100 ratio is not significant.

The number of fixations for men (Table 10) was 2580 on the left and 2440 on the right. This shows a ratio of 105.7 to 100 in favor of the left side.

Table 10 Showing Number of Fixations, Left and Right, for Men

Pair of Adv'ts Number	Group I		Group II		Group III		Group IV		Totals	
	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
1	36	41	40	39	28	30	35	30	139	140
2	35	30	39	33	39	39	38	28	151	130
3	27	36	40	32	31	33	28	25	126	126
4	37	24	38	38	36	34	35	26	146	122
5	34	34	38	32	34	34	31	28	137	128
6	33	34	32	35	36	34	26	23	127	126
7	26	30	33	32	45	46	25	17	129	125
8	26	26	27	27	31	26	25	21	109	100
9	36	29	29	32	39	37	42	37	146	135
10	31	32	34	31	37	39	27	27	129	129
11	28	28	35	31	37	34	30	27	130	120
13	32	30	32	37	42	37	27	23	133	117
14	32	33	43	42	42	43	39	35	156	153
15	35	34	39	38	38	36	22	33	134	141
16	31	34	36	34	37	36	28	28	132	132
17	38	37	40	36	36	35	35	30	149	138
18	33	30	28	29	37	30	30	27	128	116
19	36	36	36	30	38	31	34	26	144	123
Totals	617	617	669	631	702	673	592	519	2580	2440

S. D. dis. Left 2.899 S. D. av. Left .6651 Average for left 33.9
Right 2.758 Right .6329 right 32.1
Difference in means 1.8

The grand totals for women (Table 11) were 1366 for the left side and 1312 for the right side. This results in a ratio of 104.1 to 100 in favor of the left side. As in the other tests, this shows that the left side is some what stronger for men than it is for women. The ratio is 105.7 to 104.1 or 101.5 to 100. This means that the left side is something like 1.5% stronger for men than for women.

Dividing the total number of fixations for men by the number of men subjects (66) gives an average of 2.04 fixations per man for the left side and 1.93 for the right side. For the women the average number of fixations for the left side was 2.11 and for the right side 2.03. According to these

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Table 11 Showing Number of Fixations, Right and Left, for Women

Pair of Adv'ts Number	Group I		Group II		Group III		Group IV		Totals	
	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
1	20	20	10	12	15	14	26	21	71	67
2	21	19	12	10	14	14	21	21	68	64
3	24	21	13	13	15	19	27	22	79	75
4	22	22	13	12	13	12	23	21	71	68
5	20	22	12	12	13	12	24	23	69	69
6	23	23	12	13	16	17	23	24	74	77
7	21	23	12	10	13	13	23	21	69	67
8	24	23	8	9	15	17	22	18	69	67
9	24	25	16	13	17	15	26	23	83	76
10	26	24	15	10	15	13	18	16	74	63
11	21	21	14	15	15	16	22	18	72	70
12	20	19	13	12	17	17	20	20	70	68
13	24	21	12	11	14	16	19	19	69	67
14	24	23	12	13	16	16	29	28	81	80
15	21	21	10	11	17	17	18	17	66	66
16	22	23	11	11	17	17	23	20	73	71
17	22	21	12	13	15	15	24	19	73	68
18	21	21	13	12	13	12	20	17	67	62
19	20	21	12	12	15	15	20	19	68	67
Totals	420	413	233	224	285	288	428	387	1366	1322

S. D. dis. left 4.564 right 4.695
S. D. av. left 1.047 right 1.051
S. D. diff. .3405

Average left 71.9
right 69.0
Mean diff. 2.9

figures the women have a greater number of fixations, on the average, for both left and right sides than do the men.

RECALL TEST

Not all psychological tests are good. Some of them are almost useless. The mere fact that a test is used in a given situation does not mean that the results are of demonstrated value. One of the most important parts of research work consists of "testing the tests". Experience has shown that a mere description of a test is not enough, and that frequently one test is not enough. Whenever a test is tested by some other test, then the value is greatly increased, and the conclusions are much more reliable. As stated above, this visual fixation test was in a way pre-tested, in that almost all the advertisements had known coupon return values. In order to check further and to test again the results of the eye movement test, it was decided to give a direct recall test. It was felt that if the results of the recall test should coincide with those of the other two tests, then the conclusions drawn would be greatly enhanced in their value.

When the subjects had finished taking the fixation test, they were given these instructions: "Part 2 of the test. You are now asked to write down all the advertisements you remember having seen. You recall that the advertisements were, for the most part, in pairs advertising the same product; therefore the mention of a trade name alone might refer to either of the two. Try to tell some distinguishing feature of the advertisement; such as, the headline, copy, a description of the illustration, or any other detail that will enable the experimenter to know exactly what you have in mind."

It is doubtful if any of the subjects had anticipated a mamory test; so that those advertisements which were recalled were those which really stood out in the minds of the subjects.

The results of this test are shown in Table 12. There were 361 recalls in all. This gives an average of 3.61 recalls per subject. There were a few of the subjects who did not recall the advertisements in a way they could be identified. For instance, a subject would write down that he recalled having seen an Ipana Tooth Paste advertisement---this in spite of the definiteness of the instructions. Such an answer was, of course, so vague that it could not be used. The recalls, as shown in the table, were recorded separately for men and women, in order to determine if there were any sex differences in recalling advertisements. There were, in all, 214 recalls made by the men and 147 made by the women. For the men this shows an average of 3.2 recalls per subject. For the women it shows an average of 4.3. These averages in relation to each other show a ratio of 134 to 100. In other words, the women recalled approximately 34% more advertisements per person than did the men.

There is hardly any case where there is any sex difference seen. There is a correlation of .83 between the results for men and women in Group B advertisements. Group A advertisements show a correlation of .75. Both of these coefficients are sufficiently high to warrant the statement that "there is a high degree of similarity in recalls by men and in recalls by women." That is, in general, those advertisements which rank high in recall value among men will rank high among women;those ranking low with one rank low with the other sex.

In order to distinguish between the members of a pair, the advertisements were designated as"A" (those which were on the left side in Groups III and IV and "B" (those on the right side in Groups III and IV). The advertisements receiving the greatest number of recalls were Advertisement A in pairs 1,7,18,19, and Advertisement B in pair 15. These advertisements

ranked high with both sexes. Advertisement 1A was recalled by 32% of the men and by 29% of the women; 7A by 36% of the men and 38% of the women; 15B by 23% of the men and 41% of the women. This latter advertisement received the greatest number of recalls, that is, among women. For the men, advertisement 7A received the greatest number of recalls. This advertisement also ranked first in total recalls. Advertisement 18A was recalled by 17% of the women and by 27% of the men; 19A by 19% of the men and by 17% of the women.

It is possible that the last cases of a series would receive more recalls. However, this would be a test of one pair against another, while the experimenter was mainly interested in testing one member of a pair

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Table 12 Showing Number of Recalls by Men and Women

Pair of Adv'ts Number	Men		Women		Totals	
	Adv't A	Adv't B	Adv't A	Adv't B	Adv't A	Adv't B
1	21	2	10	2	31	4
2	3	2	3	1	6	3
3	3	3	6	2	9	5
4	4	2	3	3	7	5
5	0	1	1	1	1	2
6	3	3	9	2	12	5
7	24	4	13	4	37	8
8	5	4	2	2	7	6
9	9	7	8	6	17	13
10	6	2	6	3	12	5
11	1	5	1	1	2	6
12	9	3	4	5	13	8
13	7	10	3	2	10	12
14	2	1	1	1	3	2
15	3	15	5	14	8	29
16	4	1	8	0	12	1
17	4	3	1	1	5	4
18	18	4	6	1	24	5
19	13	3	6	0	19	3
	139	75	96	51	235	126

Advertisement A....those shown on the left in Group IV
Advertisement B....those shown on the right in Group IV

against its partner. Even assuming that the last cases in a series would receive more recalls than others in the series, this would not explain why one of a pair would receive more than its mate. Both advertisements would receive an equal chance of recall so far as recency was concerned.

There was no advertisement that did not receive at least one recall. In four cases advertisements received more recalls than their mates while the mates had received more coupon inquiries.

The recalls were tabulated according to whether the advertisement was on the left side or the right side. The results are:

Men		Women		Both	
Left	Right	Left	Right	Left	Right
109	105	70	77	179	182

When expressed in terms of a ratio this shows: for men, 103.8 to 100 in favor of the left hand side; for women, 110 to 100 in favor of the right side (or 90.9 to 100 left to right). When totals (men and women combined) are expressed in ratio form the results are 101.7 to 100, the right side being superior.

RATING THE ADVERTISEMENTS USED IN THE TEST

Through the use of Table 3 the amount of time spent on the individual advertisements may be determined. Since the positions were changed after the first two groups had been completed, it is necessary to add the results of the left side in Groups I and II to the right side in Groups III and IV. When this is done the experimenter is able to determine which of a pair of advertisements is greater in attention value. Below is shown the total time spent on each advertisement:

Pair of Adv'ts	Product	Headline of the advertisement	Time
1	Hinds	You can't stop this but you can prevent their skins from chapping.....	1801.6
		Sunburn--------Prevent it.....	1198.4

Pair of Adv'ts	Product	Headline of advertisement	Time
2	Ipana	Dentists know the damage that soft foods do to gums.....	1345.2
		How our soft and savoury eatables have impaired the health of our gums.....	1654.8
3	Tapioca	Desserts gay, Desserts entrancing.....	1551.2
		How to make gay party desserts.....	1448.8
4	Ipana	Pink Tooth Brush is a protest from over coddled gums.....	1654.1
		How Dentists strive to repair the damage done by cooks.....	1345.9
5	Ipana	What dentists say about this modern plague....	1471.9
		Has brushing teeth become a careless habit....	1528.1
6	Ponds	The Duchess de Richelieu tells how.....	1543.6
	Dorothy Gray	The beauty of an unlined throat.....	1456.4
7	Ozite	What! Elephants tramping across my rugs.....	1654.8
		Ozite made even old rugs soft.....	1345.2
8	Pompeian	Goodbye now to half clean faces.....	1620.0
		He could be so goodlooking but.....	1380.0
9	Sal Hepatica	Hold fast the charm of 21.....	1546.1
		Feel better---Look younger.....	1543.1
10	Ozite	Like billowy pillows under your feet.....	1414.8
		How to make your old rugs like costliest.....	1585.2
11	Dorothy Gray	Lines sketched in by laughter.....	1412.3
		Seek your fortune in your mirror.....	1587.7
12	Cocomalt	I used to sleep 8 hours, yet.....	1575.2
		Nerves much calmer since she discovered.....	1428.9
13	Kolynos	Clips the wings of romance.....	1547.9
		Breaks dates----Breaks hearts.....	1452.1
14	Pebeco	Supremely happy because yours is the smiling mouth of youth.....	1613.9
		Shining teeth----a fresh sweet mouth.....	1386.1
15	Dorothy Gray	Will age leave his merciless etchings.....	1456.4
		Age comes on tiptoe, but he casts 3 shadows...	1543.6
16	True Story	161 new ways to a mans heart.....	1704.7
	Cook Book	A recipe for home happiness.....	1295.3

Pair of Adv'ts	Product	Headline of advertisement	Time
17	Bordens	Found in a soda fountain glass.....	1601.5
		The favorite of fountaineers.....	1398.5
18	New Mix	Science sat at her feet.....	1639.9
		You may not be able to live on this diet.	1360.1
19	Book of the Month	Handed you by the postman.....	1629.9
		Will you not send for this prospectus....	1370.1

Table 13 shows the number of first fixations per advertisement. The results here correspond closely with those shown above. Only two cases show outright difference. Two others showed tie results. If these 4 cases are called cases of difference, this will leave 15 out of 19 or 79% of the pairs which showed agreement in the two tests. The general rule is gathered that: <u>those advertisements receiving more initial fixations, in general, have more time spent in reading them.</u>

<u>Table 13 Showing Number of First Fixations per Advertisement</u>

Pair of Adv'ts Number	Groups I and II Left	Groups I and II Right	Groups III and IV Left	Groups III and IV Right	Totals Right III & IV Left I and II	Totals Right I and II Left III & IV
1	29	21	33	17	46	54
2	43	7	28	22	65	35
3	41	9	28	22	63	37
4	31	19	36	14	45	55
5	34	16	33	17	51	49
6	31	19	38	12	43	57
7	28	22	38	12	40	60
8	30	20	37	13	43	57
9	40	10	32	18	58	42
10	40	10	32	18	58	42
11	34	16	27	23	57	43
12	31	19	31	19	50	50
13	33	17	33	17	50	50
14	22	28	33	17	39	61
15	33	17	32	18	51	49
16	34	16	37	13	47	53
17	29	21	39	11	40	60
18	33	17	38	12	45	55
19	28	22	37	13	41	59

In Table 14 is shown a summarization of results. Here the name "A" was arbitrarily given to the advertisement on the left in Group IV, and the term "B" was given to the one on the right. "X" means a tie in the test results. The question marks in the coupon column denote those cases where coupon returns could not be determined because of unwillingness or inability of the advertisers to give the data. There are three cases out of thirteen where the "First Fixations"results disagree with the coupon results (13 is found by subtracting the number of cases where the coupon results are unknown, that is 4, and the cases of tie results, 2, from the total number of pairs, 19); in four out of 15 cases there was a disagreement between "Recall" results and "Coupon inquiry" results. In 6 out of 14 cases there was disagreement between "Number of fixations" and "Coupon" results. The percentages of agreement are: 77% between coupon results and first fixation results; 73.3% between coupon results and recall results; 57.7% between coupon results and number of fixations results. In all there were 40 cases of agreement out of a possible 57. This gives a percentage of slightly more than 70% correctness. In 8 out of 15 cases the advertisement superior in coupon returns was also superior in all other tests.

MINOR STUDIES IN ATTENTION VALUE OF SIZE

Some of the pairs of advertisements used in this test were of different sizes. For example, the space ratio in pair number 3 was approximately 200 to 100. In order to distinguish between the two advertisements being tested let us call one of them "A" and the other "B". As stated above two sizes of these advertisements were used. These two sizes will be called small (or size 100) and large (size 200). In this test the advertisements were arranged in the following order:

	Left Side	Right Side
Group I	A (100 size)	B (200 size)
Group II	A (200 size)	B (100 size)
Group III	B (100 size)	A (200 size)
Group IV	B (200 size)	A (100 size)

Thus Group I right, II right, IIILeft, and IV Left when added will give the total strength of advertisement B, and conversely, Group I Left Group II Left, Group III Right and Group IV Right when added will give the total strength of Advertisement A..By shifting the positions it is thus possible to eliminate the position and size factors. To get the strength of the small advertisements one needs merely to add the number of seconds spent on Groups I and III Left and Groups II and IV Right while Groups I and III Right and Groups II and IV Left when added will give the total strength of the large size. Since each advertisement in each size appeared on the left as well as on the right side, it can be said that the position factor can be eliminated.

Table 14 Showing Summarization of Results

Pair of Adv'ts Number	Adv't Superior In Coupons	Adv't Superior First Fix.	Adv't Superior Time Spent	Adv't Superior In Recall	Adv't Superior In Number Fix.
1	A	A	A	A	A
2	A	B	B	A	A
3	B	B	A	A	X
4	A	A	A	A	A
5	B	B	B	B	A
6	A	A	A	A	A
7	B	A	A	A	A
8	A	A	A	A	A
9	?	B	A	A	A
10	?	B	B	A	B
11	?	B	B	B	A
12	A	X	A	A	B
13	A	X	A	B	B
14	A	A	A	A	A
15	?	B	B	B	B
16	A	A	A	A	A
17	B	A	A	A	A
18	A	A	A	A	A
19	A	A	A	A	A

A separate record was kept for the men and women subjects in order that the experimenter might determine if there were any sex differences relative to attention value of size. Results of these minor studies are shown below:

Table 15 Showing Time Spent on Pair of Advertisements Number 3

	Group I		Group II		Group III		Group IV	
Size of adv't	Small	Large	Large	Small	Small	Large	Large	Small
Time spent by men	192.2	287.8	344.3	225.7	221.1	288.9	268.9	151.1
Time spent by women	120.6	149.4	76.1	103.9	92.5	147.5	201.9	128.1
Time spent by all	312.8	437.2	420.4	329.6	313.6	436.4	470.8	279.2

Total Time(in seconds) spent by men on large size advertisement 1189.9
Total time(in seconds) spent by men on small size advertisement 790.1
Ratio for men(time of large advertisement to time of small) 151 to 100

Total time (in seconds) spent by women on large advertisement 574.9
Total time (in seconds) spent by women on small advertisement 445.1
Ratio for women (time of large size to time of small size) 130 to 100

Total time spent by all subjects on large advertisement 1764.8
Total time spent by all subjects on small advertisement 1235.2
Ratio for all subjects (large size to small size) 142.8 to 100

Table 16 Showing time spent on Pair of Advertisements Number 7

	Group I		Group II		Group III		Group IV	
Size of adv't	Small	Large	Large	Small	Small	Large	Large	Small
Time spent by men	149.0	331.0	302.6	267.4	205.0	305.0	273.7	146.3
Time spent by women	82.6	187.4	83.3	96.7	79.2	160.8	214.4	115.6
Time spent by all	231.6	518.4	385.9	364.1	284.2	465.8	488.1	261.9

Total time (in seconds) spent by men on large size advertisement 1212.3
Total time (in seconds) spent by men on small size advertisement 767.7
Ratio for men (time of large size to time of small size) 158 to 100

Total time (in seconds) spent by women on large advertisement 645.9
Total time (in seconds) spent by women on small advertisement 374.1
Ratio for women (time of large size to time of small) 173 to 100

Total time spent by all subjects on large advertisement 1858.2
Total time spent by all subjects on small advertisement 1141.8
Ratio for all subjects (large size to small size) 162.7 to 100

Table 17 Showing Time Spent on Pair of Advertisements Number 12

	Group I		Group II		Group III		Group IV	
Size Adv't	Small	Large	Large	Small	Small	Large	Large	Small
Time spent by men	217.0	293.0	369.5	140.5	194.5	315.5	315.0	195.0
Time spent by women	81.5	158.5	178.0	62.0	84.0	156.0	147.0	93.0
Time spent by all	298.5	451.5	547.5	202.5	278.5	471.5	462.0	288.0

Total time(in seconds)spent by men on large advertisement 1293.0
Total time(in seconds)spony by men on small advertisement 747.0
Ratio for men(time of large size to time of small size) 174.5 to 100

Total time(in seconds) spent by women on large size 639.5
Total time(in seconds) spent by women on small size 320.5
Ratio for women (time on large size to time of small) 199.5 to 100

Total time(in seconds) spent by all subjects on large size 1932.5
Total time(in seconds) spent by all subjects on small size 1067.5
Ratio for all subjects (large size to small size) 181 to 100

Table 18 Showing Time Spent on Pair of Advertisements Number 18

	Group I		Group II		Group III		Group IV	
Size of adv't	Small	Large,	Large	Small	Small	Large	Large	Small
Time spent by men	245.5	264.5	340.2	169.8	223.5	286.5	259.7	250.3
Time spent by women	119.5	120.5	169.0	71.0	118.0	122.0	116.8	123.2
Time spent by all	365.0	385.0	509.2	240.8	341.5	408.5	376.5	375.5

Total time (in seconds) spent by men on large advertisement 1150.9
Total time (in seconds) spent by men on small advertisement 889.1
Ratio for men (time on large advertisement to time on small)129.4 to100

Total time (in seconds) spent by women on large size 528.3
Total time (in seconds) spent by women on small size 431.7
Ratio for women (time on large size to time on small size) 122.2 to 100

Total time (in seconds) spent by all subjects on large size 1679.2
Total time (in seconds) spent by all subjects on small size 1320.8
Ratio of all subjects....(large size to small size) 127.1 to 100

Summary and Comparison of Ratios Regarding Size

Pair of Adv'ts Number	Results For	Ratios Large Ad. To Small	Attention Ratios	Square Root Ratios	Difference Between Attention Ratios & Square Root Ratios Women	Men	All Subjects
3	Women	200.0	130.0	141.4	11.4		
	Men	200.0	151.0	141.4		9.6	
	All	200	142.8	141.4			1.4
7	Women	260	173.0	162.2	10.8		
	Men	260	153.0	162.2		4.2	
	All	260	162.7	162.2			.5
12	Women	380	199.5	194.5	5.0		
	Men	380.0	174.5	194.5		20.0	
	All	380	181.0	194.5			13.5

Pair of Adv'ts Number	Results For	Ratios Large Ad. To Small	Attention Ratios	Square Root Ratios	Differences Between Attention ratios and Square root ratios Women	Men	All subjects
18	women	150.0	122.2	122.5	.3		
	men	150.0	129.4	122.5		6.9	
	all	150.0	127.1	122.5			4.6
Total amounts of difference					27.5	40.7	20.0
Total differences divided by 4					6.8	10.2	5.0

The square root ratios above are derived as follows: Where the size of the advertisement increases 4 times, the pulling power of the advertisement merely increases by the square root of the increase in size, that is, it doubles. In the above case where the size increased by 2 (the large advertisement is twice as large as the small) the pulling power of the advertisement would increase (according to the Square Root Law) by 1414 times (this figure is the square root of 2).

By dividing the differences shown in the summary above by the attention ratios the following results are obtained:

1.4	divided	by	142.8	equals	1.0%
.5	"	"	162.7	"	.3%
13.5	"	"	181.0	"	7.4%
4.6	"	"	127.1	"	3.7%

According to this the results in pair of advertisements number 3 differed from the square root law by only 1% etc. This seems to be sufficiently close to make this part of the test a confirmation of the square root law.

Taking the averages of the results for men and for women, one finds the ratios of 145 to 100 for men and 166 to 1 0 for women. These ratios are obtained by adding together all amounts of time spent by men on the large sizes and dividing by the total amount of time spent by men on the smaller sizes. The ratio for women is obtained in a similar manner. This would seem to show that the large sizes have somewhat more attention value for women than for men (166 to 145 or 114.5 to 100). This

ratio of 114.5 to 100, however, is not very reliable because there are two cases where the attention value for women is higher than that for men, while there are two other cases where the reverse is true. An interesting sidelight to this test is seen in pair 18 where, with women observers, advertisement A was much stronger than advertisement B (551.7 to 426.3). While A with two large sizes and two small sizes was observed 551.7 seconds, the total of the large size (two presentations of A and two of B) was only 528.3 seconds. This shows that some advertisements are stronger than others regardless of size.

CONCLUSIONS

Relative to Position

1. The left hand side seems to have a strong initial advantage in attention value, but this advantage almost disappears during the first 30 seconds of observation.

2. The right hand side is slightly stronger in memory value.

3. The left hand side is slightly stronger in number of fixations.

Relative to Size

It is difficult, if not dangerous, to try to draw definite conclusions from the four tests made on advertisements of different sizes. The number of cases is far too small to be reliable. However, from the available material these conclusions may be drawn:

1. Larger space generally means increased attention value.

2. The attention value does not increase in proportion to the increase in size.

3. The increase in attention value is fairly close to the square

root of the increase in size.

Relative to Sex Differences (general)

1. Men's attention tends to change more radically during the first 30 sedonds of observation than does that of women.

2. Women, on the average, recall approximately one third more advertisements than do men.

3. So far as the advertisements recalled are concerned, there seems to be little if any difference between sexes.

Sex Differences (position)

1. The left hand side seems to be about 28% stronger in attention value (in first fixations) for men than for women.

2. The left side is slightly stronger for men in number of fixations.

3. The left hand side is about 14% stronger for men in recall value than for women. The men recalled more advertisements on the left side and the women recalled more on the right side.

Sex Differences (size)

1. On the average, the larger spaces seem to have more attention value for women than for men.

CHAPTER V

A VISUAL FIXATION TEST

WITH

CERTAIN

NEW FEATURES

In this investigation the technique was that of observing the eye movements to determine the attention and intetest. The test was somesimilar to that made by Nixon. He did some of the preliminary work on this test and constructed the apparatus which was used in those cases where the time was recorded. As he explains, "In the presence of an interest arousing situation, the object fixated may be taken to be the object of attention and second, that of two interest provoking situations presented simultaneously, the one eliciting the longer periods of visual fixation over a given period of time may be taken to possess the greater attention (or interest) value."[1] The first assumption is that of estimating attention"in terms of what the subjects look at. The second is a matter of common sense psychology, at least, which assumes that if two situations are presented and one gets more visual fixations it is for the time being the more attractive, or that more attention is being given to it."

EQUIPMENT

The experimenter first prepared a dummy package of an empty corrugated box wrapped in paper. This box was about 12 x 12 x 18. Thus it was small enough to be carried under the arm, and at the same time large enough to have on one side advertisements pasted side by side but with a few inches between.

PLACE AND METHOD

The place, or laboratory if it could be termed such, where the tests were conducted was the New York subway. The investigator carried the dummy package under one arm, and by standing and holding to the strap with the other hand, placed the package at reading distance directly in front of and on a level with the eyes of the passenger who was seated. Since the

1. Nixon, H. K. op. cit. p. 8.

lights were overhead and slightly in front of the investigator, the advertisements were plainly visible and readable without undue effort on the part of the subject.

The experimenter then observed the eye movements of this subject, noting which one of the advertisements received the first definite fixation and on which one of them the greater amount of time was spent.

SUBJECTS

One of the most frequent and valid objections to the laboratory method of testing is that the subjects are students, and so, are not a fairly representative sample of the buying public either as to education, wealth, or experience as a consumer of the product. A second objection along the same line is that the subjects know that they are being tested, and this weakens the whole experiment. Since they are acting under abnormal conditions, their reactions will not be the same as those of people who view the advertisement as readers of magazines and not as subjects for a test.

The subjects for the test described here were passengers on the West Side subway in New York. In all there were something over 5800 subjects. As one who rides the New York subways knows, he can see all types and kinds of people here, young and old, big and little, rich and poor, students, housewives, business men, laborers, or any other of numerous classifications. Such a group is a very heterogeneous one. The average reader of the newspapers would fall in just such a group of people. Since practically all of the advertisements were those of products whose purchasers were the general public, these subjects were as near as possible a representative group.

The experimenter made the tests at times when the subway was fairly crowded in order that the subjects would not become suspicious because of

his standing there in front of them when there were vacant seats. In almost all of the cases the subjects showed no suspicion that they were being observed. They seemed to view the experimenter as merely another passenger, one who was forced to stand because there were no vacant seats. It is obvious then that many objections commonly offered (such as...that the subject knows he is being tested, that subjects are not typical readers, reading conditions are not the same etc.) will not apply here.

GROUPING

It is to be realized that individuals differ greatly from one another, but it is also a well recognized principle that taking a large number of people, groups are similar one with another. Just how many people should be used as subjects and how many groups should be used were questions that had to be settled. The investigator was faced with two problems: first, he should use groups that were not so small that the results would be too dependent on chance; and second, he should use groups that were not so large that he would waste time in duplicating the work. Obviously, groups of two or even five persons would be too small. The chances are much greater that five people will all have similar reactions than that all members of a larger group, say 25, would have similar reactions.

It was first decided arbitrarily that the test should be made on 150 subjects divided into 3 groups of 50 each. After several tests this number was changed to 75 subjects, divided into 3 groups of 25 each. Starch says that if "a given test is repeated on 25 or more persons under uniform controlled conditions we will have a reasonably accurate measure of the advertisements."[1] The same conclusion was reached in this test and for the remainder of the cases 3 groups of 25 each were used.

1. Starch, Daniel. op. cit., p. 302.

"The representativeness of a sample consists in taking several other groups of approximately the same size from the general population If the measures calculated from these groups are nearly the same size, we may be reasonably assured that we have representative samples. If the similarity is not fairly close, we must continue adding cases until the successive samples are approximately similar."[1]

"The simple and practical method of judging whether the sample is sufficiently large is to continue to take independent measures or to add cases at random until the addition of extra cases fails to produce any appreciable fluctuation in the average or median. When this point is reached, the sample is probably large enough to be taken as a fairly representative sample of the larger group from which it has been drawn."[2]

In order to see if this number of subjects (3 groups of 25 each) were sufficient, the experimenter tested one pair of advertisements on 9 groups of 25 each and another pair of advertisements on 18 groups of 25 each. The remarkable uniformity of these results is of special significance because such unusual coincidence of results practically eliminates the element of chance. The results are as follows:

Adv'ts	First Fixations Groups			Averages	Averages For Groups	
	I	II	III			
A	17	15	16	16		
B	8	10	9	9		
	IV	V	VI			
A	17	15	15	15.67	I through VI	15.83
B	8	10	10	9.33		9.17
	VII	VIII	IX			
A	17	14	16	15.67	I through IX	15.77
	8	11	9	9.33		9.23

1. Garrett, H. E. Statistics in Psychology and Education, p. 144.
2. Ibid., p. 142.

The averages are, of course, obtained by adding the results of the various groups and then dividing by the number of groups. In these three cases the deviations from the averages for all groups (15.77 and 9.23) are:

for groups I, II, and III	.23
for groups IV, V, and VI	.16
for groups VII,VIII,and IX	.16
Average deviation	.183

The average deviation divided by the average for A is .0116, that is, slightly more than one per cent. In other words, each average differs from the grand average by only 1%. This is so small that it proves almost conclusively that 3 groups will be a representative sample and that use of more will be a mere duplication. Following are the results in the case where 18 groups of 25 subjects were tried:

Groups	Adv'ts	First Fixations			Cumulative averages for groups	
I, II, III	A	24	22	24	I through III	23.67
	B	1	3	1		1.33
IV, V, VI	A	23	24	21	I through VI	23.17
	B	2	1	4		1.83
VII,VIII,IX	A	24	21	24	I through IX	23.11
	B	1	4	1		1.89
X, XI, XII	A	23	23	24	I through XII	23.17
	B	2	2	1		1.83
XIII, XIV, XV	A	23	24	23	I through XV	23.00
	B	2	1	2		2.00
XVI, XVII, XVIII	A	24	24	23	I through XVIII	23.11
	B	1	1	2		1.89

In this case the average deviation is somewhat higher than it was in the case where 9 groups were used, but it is still comparatively small (an average deviation of .44 which is only .0192 of the average for "A").

One can see in both cases that three groups are a "reasonably accurate measure", and that any larger number merely duplicates the work

already done. The averages are so similar that it may be safely assumed that 3 groups of 25 each are a fair sample.

Another question which the experimenter had to decide was whether one side (left or right) had a stronger pulling power than the other in this type of test, and how much greater if any. In order to determine this the investigator made a test on 75 people and then reversed the positions of the advertisements, placing on the right side the one that had been on the left and vice versa. He then made the test on 75 other subjects. The results of this test are as follows:

	When shown on	
Adv't	Left side	Right side
A	46 first fixations	44 first fixations
B	31 " "	29 " "
Totals	77	73

This shows that the left hand side is slightly stronger than the right (ratio of approximately 105 to 100), but this position of superiority is so small that it was assumed that the position factor would not be a serious, disturbing one. In examining the 38 pairs of advertisements tested, it may be found that there were about as many winners (superior in attention value) on the one side as on the other. Thus the experimenter concluded that the attention factor in this test was a matter almost entirely determined by the advertisement itself. It is to be unddr stood that the author does not mean to imply that the position factor never enters. However, it can be seen that the test is somewhat different from reading conditions where we are accustomed to letting our eyes fall first on the upper left hand corner of the left hand page which consequently makes that page somewhat stronger. The subject was confronted by two advertisements side by side, and the effect was somewhat as though he should suddenly see two men walking down the street side by side. There would be

no particular reason why he should look at the man on the left, except for some peculiar characteristic that that person possessed.

For some of the experiments the investigator kept a detailed record of the number of men and women subjects, and the record of the men's reactions was kept separate from the record of the women's reactions. This was done in order to determine if there were any noticeable sex differences in the matter of attention and interest. The results of some of these tests are shown later.

THE ADVERTISEMENTS USED

The advertisements which were used were advertisements which keyed coupons had revealed to the advertiser which member of a pair was the better. In practically all the cases the experimenter did not know the advertisement which had pulled the greater number of inquiries until after he had performed the test. This was done so that, as far as possible, the results would not be predetermined or biased. In all there were 38 pairs of advertisements tested. 8 of these pairs were taken from "Psyching the Ads", a book by Carroll Rheinstrom; 7 pairs were taken from the "Can you pick the winner" contest run in Printer's Ink Magazine (1932); 8 pairs were dummy advertisements using as headlines the titles of books of the Haldeman-Julius Blue Book Series; 11 pairs were loaned by the advertisers themselves; 5 pairs were obtained from miscellaneous sources.

In order to make the results more easily understood the author has grouped the advertisements (that is, the results) as follows:

Group 1....Those advertisement from "Psyching the Ads"
Group 2....Those from the "Can you pick the winner" contest
Group 3....Those book titles taken from Haldeman-Julius book "First Hundred Million"
Group 4....Those presented by the advertisers
Group 5....The miscellaneous advertisements

The "first fixation" figures represent attention values. Which ever

advertisement was first looked at (or first fixated) by the subject was recorded as receiving the first fixation in that case. There was, of course, only one first fixation for each subject, therefore the number of first fixations would always be the number of subjects tested. The results of these tests are shown below:

Pair Number	Group	First Fixations For Adv't A	For Adv't B.	Totals For A	For B	Headlines
1	1	46	29	90	60	A...Nothing Better (Canthrox)
	2	44	31			B...Frame of Lovely Hair (Canthrox)
2	1	42	8	108	42	A...Handed by the Postman
	2	33	14			B...Will you not send for this
	3	33	17			(Book of the Month)
3	1	45	5	124	26	A...The Mouth of Youth
	2	36	14			B...Shining Teeth
	3	43	7			(Pebeco)
4	1	8	17	22	53	A...The Woman who is Endowed With
	2	7	18			B...How can I make Myself
	3	7	18			(both....True Story)
5	1	17	8	55	20	A...Free to Every Girl
	2	20	5			B...My Secret! A Touch of Henna
	3	18	7			(Hennafoam)
6	1	9	16	25	50	A...Beauty of an Unlined Throat
	2	10	15			B...Duchess de Richelieu Tells How
	3	6	19			(A..D.Gray B..Ponds)
7	1	13	12	54	46	
	2	14	11			
	3	13	12			
	4	14	11			
8	1	7	18	24	51	A..A Recipe for Home Happiness
	2	8	17			B..New Ways to a Man's Heart
	3	9	16			(Both True Story Cook Book)

The question mark in the table shown below signifies that the coupon inquiries(results) are unknown. The results as shown by Mr Rheinstrom are "incomplete". The author made this test hoping that he might find out the completed results, but in answer to a letter from the author, Mr. Rheinstrom stated that he was unable to give the complete data. It

will be noted that every case showed agreement between the test results and the actual sales results.

Table 19 Showing Comparison of Results in Fixation Test and of Sales or Coupon Pulling Power (for Adv'ts in Group 1)

Pair of Adv'ts Number	Advertisement which is Superior in Pull. Power.	Fix. Test
1	A	A
2	A	A
3	A	A
4	?	B
5	A	A
6	B	B
7	A	A
8	B	B

Group 2 Advertisements from "Psyching the Ads"

Pair Number	Group	First Fixations Adv't A	Adv't B	Totals A	B	Headlines
9	1	18	7	51	24	A..Ozite Made Even Our Old Rugs
	2	16	9			B..What! Elephants Tramping Across
	3	17	8			(Ozite)
10	1	16	9	47	28	A..Found in a Soda Fountain Glass
	2	17	8			B..Favorite of Fountaineers
	3	14	11			(Borden)
11	1	7	18	25	50	A..Desserts Gay, Desserts Entrancing.
	2	8	17			B..How to make Gay Party Desserts.
	3	10	15			
12	1	10	15	28	47	A..Free to Dog Lovers
	2	10	15			B..How to Take Care of your Dog.
	3	8	17			(Old Trusty Dog Food)
13	1	10	15	32	43	A..Now Nipped by Frost
	2	11	14			B..Lashed by Freezing Winds
	3	11	14			
14	1	13	12	39	36	A..Wallace Irwin's Corona
	2	12	13			B..Another Score for Corona
	3	14	11			
15	1	16	9	49	26	A..I used to Sleep 8 Hours, Yet
	2	17	8			B..Nerves Much Calmer Now
	3	16	9			(Cocomalt)

Table 20 Showing Comparison of Results of Fixation Test and of Sales or Coupon Pulling Power (For Adv'ts in Group 2)

Pair of Adv'ts Number	Advertisement which is Superior In Pull.Power	In Fix.Test
9	A	A
10	B	A #
11	B	B
12	A	B #
13	B	B
14	B	A #
15	A	A

The sign # designates those cases where there was a disagreement between the fixation test results and the results according to actual sales or coupon pulling power. In revealing which is the winner of pair number 12, the person who conducted the "Canyou pick the winner" contest says, "A peculiar sidelight of this copy was the reverse result obtained in another group of publications, the fan group so called, including "Field and Stream", "Hunting","National Sportsmen", etc. " With such a criticism as this standing against the pair itmight be said that the fixation test did not necessarily disagree with the pulling power results.

Pair number 10 of this test was the same as pair 17 in the fixation test reported on in the preceding chapter. In bothethese tests advertisement A was selected as the superior one. These results, however, do not coincide with those of the coupon returns. The author is inclined to believe that the tests reveal the true attention and interest values, but that the advertisements in question are exceptions to the rule that attention values and coupon inquiry values coincide. There may easily be factors in the advertisement which will weaken a strong advertisement or strengthen a weak one. It is quite possible that an advertisement may be strong on the stages of a sale such as attention and interest and then fall down on the last stages, desire and action. This may be what happened in this case

In pair 14 the attention results of the visual fixation test are so close (39 to 36) that they might easily be due to chance. It is unfortunate that more groups of this pair were not tested.

Mr. Haldeman-Julius in his book, "The First Hundred Million" tells how he sold one hundred million copies of the five cent books. He gives some interesting examples of how changes of words or phrases have increased the sale of certain of these books. When a book did not sell well, Mr. Haldeman-Julius says that it was taken to what is called the "hospital" where the title was studied and changes made. He says, "Buyers of the little blue books can be induced to purchase only what they earnestly desire to read." In the advertising that was used to sell these books, no one book was favored over another, but each received the same amount of advertising space, one agate line in each advertisement. One may say, then, that to a large degree the sale of these books depended on the attention and interest values of the titles. Most of the titles which the author tested were taken from the "Hospital" list. Thus we know the sales results under one title and also those under the new title.

For testing out these titles two dummy advertisements were constructed. Across the face of these were printed the titles in such a way that they resembled headlines. One of these advertisements had the picture of a chauffeur standing by his automobile, while the other had the picture of a man and a woman. Both advertisements had the same kind of border; they were both of the same size, and had the same form of layout.

One of the titles, let us call it title "A", was pasted on the advertisement with the chauffeur background. Another title, let us call it "B", was pasted on the other dummy. After making the fixation test with the

titles in these positions, the titles were changed in position so that title "A" was now in the position that had been occupied by "B",and "B" was now in the place where "A" had been. The test was then performed again.

Thus each title was tested with dummy "A" and each with dummy "B". For this reason the position factor and the background factor were assumed to be eliminated. So when the total fixations received by title "A" (in both tests) were measured against the total fixations received by "B", it could be said that only attention and interest values were included. The results of the tests on the eight pairs of titles are shown below:

Pair Number	Group	First Fixations Adv't A	Adv'tB	Totals A.	B.	Headlines
16	1	35	40	84	26	A... Care of Skin and Hair
	2	49	26			B... Care of Mouth and Teeth
17	1	18	7	109	42	A...Quest of a Blond Mistress
	2	16	9			B...Fleece of Gold
	3	16	9			
	4	21	4			
	5	20	5			
	6	18	7			
18	1	14	11	93	57	A...How to Improve your Vocabulary
	2	15	10			B...Romance of Words
	3	13	12			
	4	15	10			
	5	19	6			
	6	17	8			
19	1	13	12	93	57	A...Woman's Sexual Life
	2	13	12			B...Marriage vs Divorce
	3	14	11			
	4	19	6			
	5	16	9			
	6	18	7			
20	1	14	11	95	55	A...A Lustful King Enjoys Himself
	2	13	12			B...None Beneath the King
	3	15	10			
	4	19	6			
	5	16	9			
	6	18	7			

Pair Number	Group	First Fixations Adv't A	Adv'tB	Totals A	B	Headlines
21	1	11	14	69	81	A...Humorous Anecdotes
	2	8	17			B...Popular Jokebook
	3	8	17			
	4	15	10			
	5	13	12			
	6	14	11			
22	1	8	17	56	94	A... The Age of Courtship
	2	8	17			B...How to Love
	3	9	16			
	4	10	15			
	5	11	14			
	6	10	15			
23	1	12	13	81	69	A...Story of a Notorious Criminal
	2	11	14			B...Pen, Pencil and Poison
	3	9	16			
	4	19	10			
	5	15	10			
	6	15	10			

Table 21 Showing Comparison of Results of Fixation Test and of Sales or Coupon Pulling Power (for group 3)

Pair of Adv'ts Number	Advertisements superior in Pull. Power	Fix. Test
16	A	A
17	A	A
18	A	A
19	A	A
20	A	A
21	B	B
22	B	B
23	A	A

It will be seen that there was not a single case of disagreement in this group of cases. The results of the fixation test coincided exactly with the sales results.

Group 4 Advertisements From the Advertisers Themselves

Pair Number	Group	First Fixations Adv't A	Adv'tB	Totals A	B	Headlines
24	1	12	38	29	121	A...Clips the Wings of Romance
	2	6	44			B...Wanted 500,000 Liberty Girld
	3	11	39			(Kolynos)

Pair Number	Group	First Fixations Adv't A	Adv'tB	Totals A	B	Headlines
25	1	14	36	40	110	A..Breaks Hearts, Breaks Dates
	2	12	38			B..Wanted 500,000 Liberty Girls
	3	14	46			(Kolynos)
26	1	29	21	171	129	A..Clips the Wings of Romance
	2	28	22			B..BreaksHearts, Breaks Dates
	3	29	21			(Kolynos)
	4	30	20			
	5	27	23			
	6	28	22			
27	1	33	17	113	37	A..Wanted 500,000 Liberty Girls
	2	40	10			B..Full page advertisement
	3	40	10			(Kolynos)
28	1	31	19	100	50	A..Full page advertisement
	2	34	16			B..Breaks Hearts, Breaks Dates
	3	35	15			(Kolynos)
29	1	39	11	119	31	A..Wanted 500,000 Liberty Girls
	2	41	9			B..Dont be a Rumble Seat Rider
	3	39	11			(Kolynos)
30	1	27	23	93	57	A..Dont be a Rumble Seat Rider
	2	32	18			B..Breaks Hearts, Breaks Dates
	3	34	16			(Kolynos)
31	1	26	24	122	78	A..Pink Tooth Brush is a Protest
	2	35	15			B..How Dentists Strive to
	3	32	18			(Ipana)
	4	29	21			
32	1	30	20	241	209	A..What the Dentists Say about this
	2	25	25			B..Has Brushing the Teeth Become a
	3	30	20			(Ipana)
	4	24	26			
	5	27	23			
	6	27	23			
	7	25	25			
	8	27	23			
	9	26	24			
33	1	30	20	122	78	A..Dentists Know the Damage Done
	2	30	20			B..How Our Soft and Savoury Eatables
	3	32	18			(Ipana)
	4	30	20			
34	1	9	16	26	49	A..You May not be Able to Live on This
	2	9	16			B..Science Sat at her Feet
	3	8	17			(New Mix)

Table 22 Showing Comparison of Results of Fixation Test and of Sales or Coupon Pulling Power (for Group 4)

Pair of Adv'ts	Advertisement Superior in Pulling Power	Fix. Test
24	B	B
25	B	B
26	A	A
27	A	A
28	A	A
29	A	A
30	A	A
31	A	A
32	B	A #
33	A	A
34	B	B

Only in one case out of eleven in Group 4 was there a disagreement between the coupon pulling power and the results of this fixation test. The Kolynos advertisements used in pairs 24, 25, 26, 27, 28, 29, and 30 may be deisgnated as A, B, C, D, and E. These advertisements were tested as follows: A vs B, A vs C, A vs D, A vs E, B vs D, and Bvs E. Since the advertisements were tested in this way it is possible to determine not only the fact that one of a pair was better, but also possible to determine the order of merit ranking of the advertisements. Ranked in the order of merit (according to coupon pulling power) they stood: first, 24B; second, 27B; third, 24A and 29B tied; fourth 25A. Advertisement 24B was exactly twice as strong in pulling power as advertisement 25A, while the other advertisements had coupon returns which ranged between these two extremes.

The ranking given by the fixation test was very similar to that of the coupon returns. Three of the Kolynos advertisements had the same ranking in both tests (coupon and fixation). The other two advertisements unfortunately were not tested against each other. Because of the small number of items the coefficient of correlation between the actual pulling

power and the fixation test results is not extremely reliable. However, the author worked this and found the extremely high result of .975[1]

Group 5 Miscellaneous advertisements

In this last group the author has placed a few pairs of advertisements that came from miscellaneous sources. The Pompeian advertisements are unusual in that the results were obtained through a so called "split run". One of these advertisements was run in half the copies of a certain issue of a magazine. After half of the copies had been printed, the other advertisement was put in the press (in the same position, same page, etc. as the first advertisement) and the other copies were printed. This, of course, made it possible to eliminate the differences of time of issue, page, position, size, etc. Thus one advertisement went to half the subscribers of the magazine and the other advertisement to the other subscribers.

Group 5 Miscellaneous advertisements

Pair Number	Group	First Fixations Adv't A	Adv'tB	Totals A	B	Headlines
35	1	17	8	110	65	A..Teeth White and Sound Always
	2	15	10			(Pebeco)
	3	16	9			B..Pink Tooth Brush is a Protest
	4	17	8			(Ipana)
	5	16	9			
	6	15	10			
	7	14	11			
36	1	14	11	49	26	A..Is it That Same old Headache
	2	16	9			B..Why Some Women Look Old
	3	19	6			(Sal Hepatica)
37	1	32	18	86	64	A..To Rid the Teeth of that (Pepsodent)
	2	27	23			B..Dont be a Rumble Seat Rider
	3	27	23			
38	1	24	1	70	5	A..Goodbye Now to Half-clean Faces
	2	22	3			B..He could be so Good-looking But
	3	24	1			(Pompeian Split-run)

1. See appendix page VII

Pair Number	Group	First Fixations Adv'tA	Adv'tB	Totals A	B	Headlines
39	4	23	2	270	30	This is a repetition of number 38
	5	24	1			made 30 days later.
	6	21	4			
	7	24	1			
	8	21	4			
	9	24	1			
	10	23	2			
	11	23	2			
	12	24	1			
	13	23	2			
	14	21	4			
	15	23	2			
	16	24	1			
	17	24	1			
	18	23	2			

Table 23 Showing Comparison of Results of Fixation Test and of Sales or Coupon Pulling Power (for Group 5)

Pair of Adv'ts	Advertisement superior in Pull power.	Fix. Test
35	A	A
36	B	A #
37	?	A
38	A	A
39	Repetition of number 38	

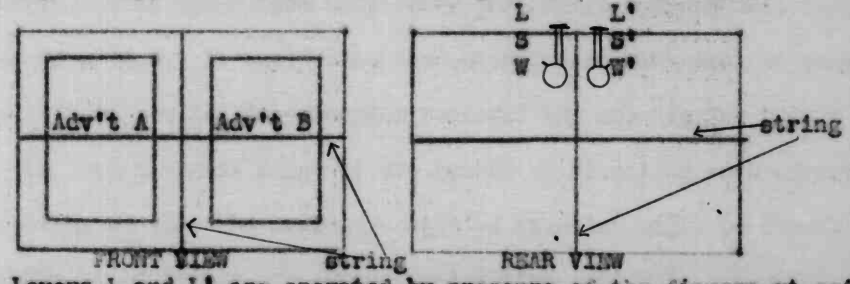
The experimenter made the test on pair number 37 without having available the coupon returns for one of the advertisements. After making the test he wrote to the advertiser asking for the figures showing coupon returns on this advertisement. However, the advertiser said that he had not made any check on the coupon returns of this advertisement. In pair 26 there was another case of disagreement of results between the two tests (coupon returns and fixation). Pair 39 was a continuation of the test on pair 38 made at a later date. The test was made to see if there would have been any noticeable difference in the results if a larger number of cases or groups had been taken. As shown previously, there is scarcely any difference in the average results from three groups and the average results from eighteen groups.

In all there were only 5 cases out of 36 where the fixation test

failed to select the advertisement stronger in pulling power. The 36 is obtained by omitting pairs 4 and 37, on which the coupon returns are unknown, and 39 which was a repetition of 38. This shows a percentage of incorrectness of only 13.8% and a percentage of agreement of 86.2% A test which predicts correctly 6 times out of 7 which advertisement is stronger in pulling power is undoubtedly of great value.

TIMING DEVICE

On the following pairs of advertisements the experimenter initiated the use of the stop watch to check the actual time spent in observing the advertisements and to give a more accurate measure of the perceptive process. As Garrett says, "The validity of any measuring instrument depends on the fidelity with which it measures whatever it purports to measure. A yardstick is valid when measurements made by it can be checked by other measurements."[1] In order to make the yardstick used in this test more valid, the apparatus shown in the diagram was constructed.



Levers L and L' are operated by pressure of the fingers at points L and L'. When the levers are pressed they start watches W and W' When the pressure is released and the lever pulled back the watch stops running. The watches accumulate time until they are reset at zero by pressing the stems S and S'

Two stop watches were fastened side by side on one side of a drawing board (see diagram above). On the other side of the board were pasted a

1. Garrett, H. E. op. cit., p. 266.

pair of advertisements. When the subject fixated advertisement "A" the lever A was pressed starting the watch to running. When his gaze shifted to advertisement "B" the A lever was pulled up stopping watch W and simultaneously lever A' was pressed starting watch W'. These levers were so close together that they could be operated easily and rapidly by the thumb and forefinger on one hand. Every time the subjects gaze shifted the appropriate lever was pressed and the other released.

The drawing board was wrapped to give it the appearance of a package. As stated above, on the opposite side from the watches the advertisements were pasted. In general, this dummy package resembled that used in the other tests except that the drawing board was larger and not so thick. Instead of holding it under his arm as in the other cases, the experimenter held it directly in front of him at the same height as the package in the other tests.

It would have been difficult to record the time for each individual subject since this would have required reading the watches and resetting them to zero. This would have made other passengers suspect that this was some kind of a test. It would also have consumed a great deal of unnecessary time. Therefore the experimenter recorded the results for groups of 5 people. He kept a mental count of the number of fixations each advertisement received, so that the average length of fixation might be found. The experimenter stood before one subject until that subject's attention was transferred to something else in the car, as a car card, a person across the aisle, etc. That is, as long as the subject was observing one of the two advertisements the experimenter recorded the time. After the subject's gaze shifted from these advertisements the experimenter passed on to another subject. After 5 people had looked at the advertisements the results were

recorded, and the watches were set back to zero. The results of these tests are similar to those where no timing device was used. This strengthens the other tests and enhances their value.

The following cases 40, 41, and 42 are repetitions of others already reported on (38, 34, and 15.) However, since a timing device was used the record is one of number of fixations and amount of time spent. As stated above, the investigator used 15 groups of 5 subjects each instead of the customary 3 groups of 25 men each.

The standard deviation of the difference was worked out in each of the three cases, both for time per person and for the number of fixations per person. "The difference between the averages should be about three times the S. D. diff. if it is to be considered a significant difference."[1] "A difference of more than 4 times the standard deviation can scarcely happen by the influence of chance alone."[2] In every case in which the S. D. diff. was worked it was found to be significant. The reader is referred to the appendix for an illustration of how the S. D. diff. is obtained.

1010.2 seconds were spent in observing the advertisement "A" in case 40 (headline Goodbye to Halfclean Faces). 507.6 seconds were spent in observing the mate to this advertisement (headline...He could be so Goodlooking But he had that Half Clean Look). This shows averages of 13.47 seconds per person for "A" and 6.76 seconds per person for "B". The number of fixations (averages of 4.55 per person on "A" and 3.3 per person on "B") also point to the superiority of "A". This advertisement was the superior one in coupon returns and was shown superior in pair 38 above.

750.8 seconds of observation were spent on "A" in case 40 and 482

1. Hepner, H. W. op. cit., p. 691.
2. Gavett, G. I. op. cit., p. 180.

seconds of observation were spent on "B". The average number of fixations per person (1.43 for "A" and 1.33 for "B") also shows the superiority of "A" which was superior in coupon returns too. Advertisement "A" was the same advertisement as "B" in case 34 above. This case (34) also pointed to the superiority of this advertisement in initial fixations.

In case 42 the subjects spent 542.3 seconds observing "A" and 363.5 seconds observing "B". Again the average fixations per person (1.6 for "A" and 1.5 for "B") point to "A" as the superior advertisement of the pair. This advertisement also ranked higher in coupon returns and in the results shown in case 15 relative to first fixations.

Pair of Adv'ts 40 Pompeian (15 groups of 5 each)

	A			B		
Group	Number of Fix.	Time Spent	Aver. time per fixation	Number of Fix.	Time Spent	Aver. time per fixations
1	8	52.7	6.6	7	25.5	3.6
2	16	108.5	6.8	8	26.5	3.3
3	6	35.8	6.0	10	38.2	3.8
4	14	74.4	5.3	11	24.1	2.2
5	11	44.5	4.4	11	27.6	2.5
6	7	49.5	7.1	8	25.0	3.1
7	13	106.2	6.5	10	43.8	4.4
8	10	46.5	4.6	12	47.0	3.9
9	11	72.6	6.6	7	24.5	3.5
10	11	72.5	6.6	9	21.4	2.4
11	12	60.5	5.0	11	31.0	2.8
12	12	61.9	5.2	10	37.5	3.7
13	11	58.6	5.3	10	45.2	4.5
14	12	83.0	6.9	9	40.9	4.5
15	12	83.0	6.9	10	49.1	4.9
	164	1010.2	Totals	143	507.6	

Averages	Adv't A	Adv't B
Time per person	13.47	6.76
No. Fix. per person	2.2	1.9
Time per fixation	6.16	3.54

Standard Deviation differences	
For A and B in time per person	.0059
A and B in time per person	.0622
A and B in no. fix. per person	.0099

Pair of Adv'ts 41 New Mix Tooth Paste (15 groups of 5 each)

Group	A			B		
	Number of fix.	Time Spent	Aver. time per fixation	Number of fix.	Time Spent	Aver. time per fixation
1	6	39.0	6.5	7	30.0	4.3
2	7	40.0	5.7	7	31.8	4.5
3	7	41.0	5.9	5	18.1	3.6
4	9	50.9	5.6	12	75.8	6.3
5	9	53.0	5.9	7	33.0	4.7
6	7	50.0	7.1	7	33.5	4.8
7	9	84.0	9.4	8	33.3	4.2
8	6	40.0	6.6	6	35.1	5.9
9	6	45.6	7.6	7	37.0	5.3
10	6	47.9	8.0	5	27.1	5.4
11	7	45.9	6.5	5	25.0	5.0
12	9	60.0	6.6	6	34.3	5.7
13	6	36.5	6.1	6	22.0	5.7
14	7	47.0	6.7	7	28.2	4.0
15	6	40.0	6.6	5	18.0	3.6
	107	760.8		100	482.0	

Averages	A	B	Standard Deviation differences	
Time per person	10.01	6.4	Time per person (A and B)	.05601
No. fix. per person	1.43	1.33	Time per fixation (A and B)	.02591
Time per fixation	7.01	4.82	Number fix. per person	.00717

Pair of Adv'ts 42 Cocomalt (15 groups of 5 each)

Group	A			B		
	Number of fix.	Time Spent	Aver. time per fixation	Number of fix.	Time Spent	Aver. time per fixation
1	8	39.1	5.0	5	25.5	5.1
2	8	35.0	4.4	7	30.5	4.4
3	9	40.1	4.5	6	30.0	5.0
4	8	39.1	5.0	7	31.0	4.4
5	8	33.3	4.1	9	20.0	2.2
6	7	26.5	3.8	7	20.0	2.9
7	10	51.0	5.1	6	18.8	3.1
8	8	40.8	5.1	9	28.0	3.1
9	7	21.4	3.1	9	28.5	3.2
10	7	26.1	3.6	8	24.1	3.0
11	10	55.5	5.5	7	23.0	3.3
12	7	32.2	4.6	7	22.4	3.2
13	8	42.2	5.3	8	23.6	3.0
14	7	33.4	4.8	8	23.0	2.9
15	7	26.5	3.8	7	15.1	2.1
	119	542.3	Totals	110	363.5	

Averages	A	B	Standard Deviation differences	
Time per person	7.23	4.84	In time per person (A and B)	.03019
No. fix. per person	1.60	1.50	In time per fixation	.01876
Time per fication	4.55	3.30	In no. fix. per person	.00515

MINOR EXPERIMENT ON DETERMINING ATTENTION ELEMENT

The results of the test on pair of advertisements number 1 were:

	First Fixations		Totals		
Group	A	B	A	B	
1	44	31	90	60	This gives a ratio of 150 to 100
2	46	29			

After these two Canthrox advertisements were run in the test, the illustration from A was shifted to the position which had been occupied by the illustration on B and vice versa. This was possible because the two advertisements were the same in size and layout. With the illustrations in the new positions the advertisements were again submitted to the test.

The results were as follows:

	First Fixations		
Group	Adv't A with illustration from Adv't B	Adv't B with illustration from Adv't A	
1	11	39	This gives a ratio of 33.3 to 100
2	14	36	
	25	75	

As the test was first run, the totals were 90 for A and 60 for B. This would have been 60 to 40 where 100 subjects were used. The ratio of 60 to 40 was changed to one of 25 to 75 by the shift in the illustrations. Thus one of the advertisements increased from 40% of the first fixations to 75% of the first fixations. This increase, when measured in terms of percentage, shows 87½% increase in attention value. This minor test shows what possibilities the advertiser would have in determining the strongest attention factors in any one particular advertisement. It also shows that sometimes an advertisement with a low attention value may be made into a successful advertisement by the addition or elimination of some particular factor.

MINOR EXPERIMENT ON ATTENTION VALUE OF COLOR

When the pair number 16 was tested, a separate record was kept for men and for women. The results are as follows:

Group	First Fixations on "Care of Skin and Hair"		First Fixations on "Care of Mouth and Teeth"	
	Men	Women	Men	Women
1	6	12	1	6
2	4	11	2	8
3	6	10	5	4
4	6	7	4	8
5	7	3	5	10
6	4	8	3	10
	33	51	20	46

When worked out into percentages, one finds that 62.2% of the men had first fixations on the advertisement with headline (or title) "Care of the Skin and Hair" while only 37.8% first looked at the other title. This is a much wider difference than in the case of women subjects. Their percentages were 52.6% for "Care of the Skin and Hair" and 47.4% for "Care of the Mouth and Teeth".

After the above test was made, the title "Care of the Mouth and Teeth" was printed in red, and the test performed in the same way as before. The results were as follows:

Group	First Fixations on "Care of Skin and Hair"		First Fixations on "Care of the Mouth and Teeth"	
	Men	Women	Men	Women
1	14	19	21	21
2	19	17	11	28
Totals	33	36	32	49

When the totals are expressed in percentages, one finds the following: 50.8% of the men and 42.4% of the women first fixated on the title "Care of the Skin and Hair", while 49.2% fixated on the other title (percentage of men) and 57.6% of the women first looked at this title. Summarizing these results one finds:

"Care of Mouth and Teeth" in red men 49.2% women 57.6%
in black " 37.8% 47.4%
% of increase after change in color 11.4 % 10.2%
10.2 divided by 47.4 is 21.5% increase in attention value for women
11.4 divided by 37.8 is 30.1% increase in attention value for men

Totals for all subjects "Care of Mouth and Teeth" in red 54%
in black 44%
Increase after change in color 10
10 divided by 44 equals 22.7% increase due to change in color.

On the basis of this the ratio of color to black and white is 122.7 to 100. These tests should not be taken as conclusive, however, since it is always dangerous to draw final conclusions from one test alone. However, there is quite a bit of weight to be laid to this particular test. When it is remembered that the test was conducted so as to eliminate the headline value, background influence, position factor, and was made on 300 subjects, it is a strong test even though not conclusive.

MINOR EXPERIMENT TO DETERMINE SEX DIFFERENCES IN ATTENTION VALUE

As a part of the major experiment the author tried a number of minor tests to determine if there were any particular differences between the sexes in attention value of the various advertisements. The results of the first fixations on these minor tests are shown below: (these results are shown in totals rather than by groups)

	----Adv't A----		----Adv't B----		Percentages----			
Pair of	First Fixations		First Fixations		Adv't A		Adv't B	
Adv'ts	Men	Women	Men	Women	Men	Women	Men	Women
17	32	77	22	19	59.3	80.2	40.7	19.8
18	39	58	24	31	61.9	65.2	38.1	34.8
24	10	19	33	88	23.2	17.7	76.8	82.3
25	17	23	32	78	34.7	22.8	65.5	77.2
27	20	17	49	64	29.0	21.0	71.0	79.0
28	39	61	14	36	73.6	62.9	26.4	37.1
29	53	66	10	21	84.1	75.8	15.9	24.2
30	17	40	35	58	33.3	40.8	66.7	59.2

In pairs 17, 28, and 29 there are some very notable differences in percentage. In pair 28 Advertisement B was approximately 50% stronger in attention value among women than among men. The same thing is true

of Advertisement B in pair 29. In pair 17 Advertisement B was over twice as strong among men as it was among women. It is difficult to try to draw any general conclusions from so few tests. The headlines in these cases are:

Pair	Adv't A	Adv't B
28	Three shades whiter in three days	Breaks Hearts, Breaks Dates
29	Wanted...500,000 Liberty Girls	Dont be a Rumble Seat Rider
17	Quest of a Blond Mistress	Fleece of Gold

It is seen in headlines 17A, 28B and 29B that there is a strong human interest or emotional appeal with a suggestion of sex in each. A conclusion might be drawn that this type of appeal is strongest with women. However, such a conclusion based on as few data as are shown here would be questionable.

GENERAL CRITICISM

To date there are no standardized, ready made, and absolutely accurate test methods. There probably never will be developed a method that is absolutely infallible. One of the most important things of all is "the failure to realize that an advertisement is only one phase of a selling situation and that the effectiveness of an advertisement depends only on itself. The other great factor or collection of factors is entirely outside the advertisement and lies in the general merchandising field....the field of fashion movements, competitive conditions, peice considerations, history of the company, type and kind of distribution, etc."[1] Undoubtedly an advertisement may be run at one time and make a number of sales or coupon inquiries while if it is run at another time in the same size, position, medium, etc. it may pull fewer or more inquiries because of the general economic conditions. This does not in the least invalidate good test methods,

1. Link, H. C. op. cit., p. 115.

however, The tests are for the purpose of determining which of a series of advertisements are best and which are poorest. Tests do not prove that an advertisement will be good at all times, or that an appeal will pull sales under any and all conditions. The test may show, however, that if one advertisement is used the advertiser can expect more sales than he would have received if he had used the other advertisements.

Advertising is based on the desires and fancies of human beings, and, therefore, advertising tests are not 100% perfect at all times. This,however, does not at all constitute an argumane to scrap tests, as some mistaken advertisers believe. Is there anything which is absolutely perfect? It is much more sensible to adopt the thing which seems to be the nearest to perfection and use it.

"In business, it seems to me, the less certain we can be about all the elements in any given proposition, the more careful we ought to be, to be absolutely certain of those we can check up. The narrower we can make the gap we have got to jump with our eyes shut, the more likely our jump will be successful."[1]

Every firm will have problems which are somewhat different from those of other concerns. Therefore, every concern should endeavor to test out the testing methods and adapt them to their peculiar conditions. They should modify their tests in the li ht of experience and in such a way that they would be as reliable as possible.

One must take an open minded attitude when he undertakes to gain conclusions through tests. "The responsibilities of advertising research are the responsibilities of any research man; to find the truth no matter how obscure, to recognize it no matter in what strange form it may present itself, to formulate it honestly, to state it unmistakably, to reason from it

1. Goode, K. M. How to Turn People into Gold. p. 175.

remorselessly and without regard to prejudices."[1]

The visual fixation test which the author has described in this chapter may serve a number of purposes. Some of them are:

1. It may determine the effect of color on attention value.
2. It may determine the effect of an advertisement when read by man and its effect when read by women.
3. It may determine what is the particular strong attention element in the advertisement.
4. It may determine the kind of appeal it is best to use.
5. It may determine which of a pair of headlines (or titles) is better.
6. It may determine which of a pair of advertisements is likely to receive the greater number of coupon inquiries or sales.

There may be one or two points in the technique of this method that are open to criticism. The measuring device, for instance, is admittedly not perfect. It has been proven that in using a stop watch one is likely to use it imperfectly, that is, the record of time may be a period that is longer or shorter than it really is. It is more common to record it as too long a time than it is to record too short a time.[2] This, however, is not a severe criticism against the visual fixation method, since the time element is used only relatively instead of absolutely. If the experimenter is apt to overestimate the time for Advertisement A, he is just as apt to do so for Advertisement B. This chance of error on one side is offset or neutralized by that chance of error on the other side.

It is seen that the method is practical and easily performed. It is

1. Cherington, Paul. Business Research. Advertising and Selling. 2/22/28 p.74.
2. Valentine, W. Readings in Experimental Psychology. p. 20.

free from many of the criticisms of other tests. The subjects do not realize that they are being tested. They are entirely representative of the general public because of the differences in age, occupation, race, sex, wealth, etc.; thus their reactions are the reactions of a normal reader viewing the advertisements under conditions near enough to normal not to excite their suspicions. The test can be completed in a few hours and at a comparatively low dost. In this way the advertiser might take advantage of the daily changes of news, ideas, and fashions where he could not when a test requires several weeks or months to perform.

Facts substantially support the statement that this met od is probably the most accurate labotatory test yet devised. The findings under this method can be measured and verified. The facts gained through objective measurement show that there was a percentage of agreement of 86.2 between the sales results (or coupon results as the case may be) and this visual fixation method. This means that 6 cases out of 7 tallied with the actual results. This is considerably higher than the results of the author's other laboratory test (see preceding chapter); than almost any of the tests made by other investigators. In the few cases where stop watches were used the results were much the same as those where no timing device was employed. In these cases the differences between the advertisements were shown by the Standard Deviation Differences to be real, to be significant, to be reliable.

APPENDIX

Sometimes statistical series are composed of items the exact magnitude of which cannot be ascertained, but which are ranked according to size. For data of this nature Spearman has suggested a coefficient designated by the Greek letter Rho. "In the use of this type of coefficient the saving of time is greatest when there are not many items to be ranked. In that case also, the use of such a rough measure of Rho is justified for a coefficient of correlation is not very reliable when the number of items is small."[1]

Mills, commenting on the use of this method, says, "The coefficient of rank correlation is appropriate where it is possible to rank individuals orlother entities, on the basis of abilities or qualities not open to exact measurement."[2]

Since the order of preference of these books is "not open to exact measurement" this method of correlation was used in this case.

CORRELATION BETWEEN TEST RANKING AND THE RANKING GIVEN BY ACTUAL SALES FIGURES OF CERTAIN HALDEMAN-JULIUS BOOKS.

Title	Test Ranking	Sales Ranking	Diff.	Square of Difference
Pen, Pencil, and Poison	7	8	1	1
None Beneath the King	8	7	1	1
The Romance of Words	6	5	1	1
The Story of a Notorious Criminal	2	4	2	4
Woman's Sexual Life	1	1	0	0
How to Improve your Vocabulary	3	2	1	1
The Lustful King Enjoys Himself	4	3	1	1
Marriage vs Divorce	5	6	1	1
Sum of the squares of the differences----------				10

Correlation is $1 - \frac{6 \text{ Sum } D^2}{N(N^2 - 1)}$ equals plus .88

1. Croxton, F. E. and Cowden, D. J. Practical Business Statistics. p. 430.
2. Mills, F. C. Statistical Methods. (Rev. 1938) p. 378.

CORRELATION BETWEEN TEST RANKING AND THE RANKING GIVEN BY ACTUAL SALES FIGURES OF CERTAIN HALDEMAN-JULIUS BOOKS

Title	Test Ranking	Sales Ranking	Diff.	Square of Difference
Fleece of Gold	3.5	8	4.5	20.25
Care of the Skin and Hair	7	2	5	25
The Age of Courtship	2	5	3	9
The Quest of a Blond Mistress	3.5	3	.5	.25
Care of the Mouth and Teeth	8	6.5	1.5	2.25
Humorous Anecdotes	1	6.5	5.5	30.25
How to Love	5	1	4	16
Popular Jokebook	6	4	2	4
Sum of the squares of the differences-------				107.00

Correlation is $1 - \frac{6 \text{ Sum } D^2}{N (N^2 - 1)}$ equals -.28

The above lists include titles of the books and the titles after they had been sent to the 'Hospital' for revision. The pairs were as follows (the revised title shown first in each case)

Group I	Group II
The Story of a Notorious Criminal	Quest of a Blond Mistress
Pen, Pencil, and Poison	Fleece of Gold
The Lustful King Enjoys Himself	Care of the Mouth and Teeth
None Beneath the King	Care of the Skin and Hair
How to Improve your Vocabulary	How to Love
Romance of Words	The Age of Courtship
Woman's Sexual Life	Popular Jokebook
Marriage vs Divorce	Humorous Anecdotes

In the Group I cases above it will be seen that those titles which ranked higher than their mates in the sales order also ranked higher in the test. In Group II this did not hold true. Only in the first pair did this hold true. In other words, in only one of the four cases was there an agreement between the test results and the actual sales ranking.

TO DETERMINE IF THE DIFFERENCE IN TIME SPENT ON LEFT AND RIGHT BY ALL SUBJECTS IS A SIGNIFICANT DIFFERENCE.

Deviations	Deviations^2
80.4	6464.16
82.5	6806.25
64.6	4173.16
70.6	4984.36
4.0	16.00
8.9	79.21
145.8	21257.64
66.7	4448.89
54.5	2970.25
7.9	62.41
18.6	345.96
28.4	806.56
11.3	127.69
18.0	324.00
10.3	106.09
53.9	2905.21
48.6	2361.96
7.6	57.76
40.7	1656.49
Group 2	
73.5	5402.25
27.9	778.41
43.0	1849.00
5.3	28.09
35.4	1253.16
48.7	2371.69
8.5	70.25
31.8	1011.24
16.3	265.69
49.0	2401.00
47.5	2256.25
21.0	441.00
43.4	1883.56
.6	.36
23.7	561.69
22.6	510.76
25.4	645.16
33.1	1095.61
40.6	1648.31
103.9	10795.21
8.8	77.44
63.8	4070.44
61.2	3745.44
3.0	9.00
5.4	29.16
93.2	8686.24
76.3	5821.69
80.1	6416.01
27.5	756.25
16.0	256.00
20.3	412.09
2.6	6.76
54.7	2992.09
26.6	707.56
48.3	2332.89
17.1	292.41
26.5	702.25
18.6	345.96
Group 4	
43.8	1918.44
25.6	655.36
93.4	8723.56
17.00	289.00
6.3	36.69
19.4	376.36
110.7	12254.49
54.8	3003.04
36.8	1354.24
16.6	275.56
42.4	1797.76
46.1	2125.21
18.4	338.56
41.8	1747.24
56.8	3226.24
69.9	4886.01
10.4	108.16
72.7	5285.29
29.2	751.64
	181958.31

S. D. dis is equal to $\sqrt{\frac{D^2}{N}}$ or 48.93

S. D. av. equals $\frac{\text{S. D. dis}}{\sqrt{N}}$ or 5.61

S. D. diff equals $\sqrt{\frac{\text{S. D.av}_1}{N_1} \text{ plus } \frac{\text{S. D. av}_2}{N_2}}$ or.9105

(Note: sum of deviations for right side is same as that for left side)

IS THE DIFFERENCE IN TIME SPENT BY MEN ON LEFT SIDE AND ON RIGHT SIDE A SIGNIFICANT DIFFERENCE (From Table 4)

Pair of Adv'ts	Total time Left side	Deviations From.Aver.	Squares of Deviations
1	957.5	52.6	2766.76
2	1075.3	65.2	4251.04
3	1026.5	16.4	268.96
4	1002.3	7.8	60.84
5	1041.3	31.2	973.44
6	982.6	27.5	736.25
7	930.3	79.8	6369.04
8	945.5	64.6	4173.16
9	1153.0	142.9	20420.41
10	1015.0	4.9	24.01
11	1010.0	.1	.01
12	955.8	54.3	2948.49
13	1015.0	4.9	24.01
14	1068.9	57.8	3340.84
15	982.7	27.4	750.76
16	1034.7	24.6	605.16
17	967.2	42.9	1840.41
18	1029.4	19.3	372.49
19	998.8	11.3	127.69
Average--	1010.1	Total----	50,054.37

S. D. equals $\sqrt{\frac{50054.37}{19}}$ or 51.33

S. D. av. is $\frac{51.33}{\sqrt{19}}$ or 11.77

Since the deviations for the right side are the same as for the left side the S. D. av. is the same for both sides.

S. D. diff. is $\sqrt{\frac{(11.77)^2}{19} \text{ plus } \frac{(11.77)^2}{19}}$ equals 3.95

Average$_1$	is	1010.1
Average$_2$	is	969.9
Diff. in avera		41.2

CORRELATION BETWEEN RATIO FOR MEN (L TO R IN TIME SPENT) AND RATIO FOR WOMEN (L TO R IN TIME SPENT) (From Tables 4 and 5)

Pair of Adv'ts Number	Ratio For Men	Ratio For Women	Deviation of col.2 from aver.	Deviation of col.3 from aver.	Squares of Column 4	Squares of Column 5	Column 4 times Column 5
1	93.6	115.6	-11.1	19.4	123.21	376.36	-215.34
2	118.8	96.4	14.1	.2	198.81	.04	2.82
3	107.6	78.1	3.1	-18.1	9.61	327.61	- 56.11
4	102.5	100.0	- 2.2	3.8	4.84	14.44	- 8.36
5	110.8	97.4	6.1	1.2	37.21	1.44	7.32
6	98.5	80.8	- 6.2	-15.4	38.44	237.16	95.48
7	88.6	82.1	-16.1	-14.1	258.21	198.81	227.01
8	94.1	91.5	-13.3	- 4.7	176.89	22.09	62.51
9	139.4	114.9	34.7	18.7	1204.09	349.69	648.89
10	105.2	93.2	.5	- 3.0	.25	9.00	- 1.50
11	104.1	85.8	.6	-10.4	.36	108.16	6.24
12	93.3	110.8	-11.4	14.6	129.96	213.16	-166.44
13	105.2	88.4	.5	- 7.8	.25	60.84	3.90
14	117.3	105.9	12.6	9.7	156.76	94.09	122.22
15	98.5	100.2	- 6.2	4.0	38.44	16.00	- 24.80
16	109.4	98.9	4.7	2.7	22.09	7.29	12.69
17	95.5	94.8	- 9.2	- 1.4	84.64	1.96	12.88
18	108.3	114.5	3.6	18.3	12.96	334.89	65.88
19	101.9	88.1	- 2.8	- 8.1	7.84	65.61	22.68
						Total------	817.97

S. D. for men is $\sqrt{\frac{2504.86}{19}}$ or 11.48 S. D. for women is $\sqrt{\frac{2439.64}{19}}$ or 11.33

Correlation is $\frac{\Sigma XY}{N \times \text{S. D.(Men)} \times \text{S. D. (Women)}}$ or .331

IS THE DI FERENCE IN TIME SPENT BY MEN ON LEFT SIDE AND ON RIGHT SIDE A SIGNIFICANT DIFFERENCE (From Table 5)

Pair of Adv'ts Number	Total Time Left	Deviations From Average	Squares of Deviations
1	545.9	45.1	2034.01
2	500.3	.5	.25
3	491.1	9.7	94.09
4	509.6	8.8	77.44
5	503.0	2.2	4.84
6	455.4	45.5	2061.16
7	459.5	41.3	1705.69
8	487.1	13.7	187.69
9	544.3	44.5	1980.25
10	491.6	9.2	84.64
11	470.5	30.3	918.09
12	530.2	29.4	864.36
13	478.3	22.5	506.25
14	519.8	19.0	361.00
15	510.1	9.3	85.99
16	506.6	5.8	33.64
17	495.9	4.9	24.01
18	538.7	37.9	2036.51
19	477.3	23.5	552.25
Sum of the squares of dev.			13612.16

S. D. equals $\sqrt{\frac{13612.16}{19}}$ or 26.76

S. D.av. is $\frac{26.76}{\sqrt{19}}$ or 6.14

S. D. diff is $\sqrt{\left(\frac{6.14}{19}\right)^2 \text{ plus } \left(\frac{6.14}{19}\right)^2}$

or 1.99

Average left side is 519
Average right side 500
difference ----------19

IS THE DIFFERENCE IN FIRST FIXATIONS(ALL SUBJECTS) LEFT AND RIGHT SIDES A SIGNIFICANT DIFFERENCE (from Table 6)

Pair of Adv'ts Number	Total times on left	Deviations From Average	Squares of Deviations
1	62	4.7	22.09
2	71	4.3	18.49
3	69	2.3	5.29
4	67	.3	.09
5	67	.3	.09
6	67	.3	.09
7	66	.7	.49
8	67	.3	.09
9	72	5.3	28.09
10	72	5.3	28.09
11	61	5.7	32.49
12	62	4.7	22.09
13	66	11.7	136.89
14	55	.7	.49
15	65	1.7	2.89
16	71	4.3	18.49
17	68	1.3	1.69
18	71	4.3	18.49
19	64	2.7	7.29
Sum of squares of deviations			343.71

S. D. dis is $\sqrt{\frac{343.71}{19}}$ or 4.25

S. D. av is $\frac{4.25}{\sqrt{19}}$ or .98

S. D. diff is $\sqrt{\frac{(.98)^2}{19} \text{ plus } \frac{(.98)^2}{19}}$

or .3178

Average left side 66.7
right side 33.3
difference--------- 33.4

IS THE DIFFERENCE IN FIRST FIXATIONS (BY MEN) ON LEFT AND RIGHT SIDES A SIGNIFICANT DIFFERENCE (from Table 7)

Pair of Adv'ts Number	Total Times On Left	Deviations From Average	Squares of the Deviations
1	42	3.2	10.24
2	48	2.8	7.84
3	44	1.2	1.44
4	43	2.2	4.84
5	46	.8	.64
6	49	3.8	14.44
7	44	1.2	1.44
8	45	.2	.04
9	49	3.8	14.44
10	45	.2	.04
11	45	.2	.04
12	42	3.2	10.24
13	44	1.2	1.44
14	39	6.2	38.44
15	47	1.8	3.24
16	48	2.8	7.84
17	48	2.8	7.84
18	47	1.8	3.24
19	45	.2	.04
			127.76

S. D. dis. equals $\sqrt{\frac{127.76}{19}}$ or 2.589

S. D. av. equals $\frac{2.589}{\sqrt{19}}$ or .59

S. D. diff. equals $\sqrt{\frac{(.59)^2}{19} \text{ plus } \frac{(.59)^2}{19}}$ or .1913

Left average fixations 45.2
Right " " 20.7
difference in averages 24.5

IS THE DIFFERENCE IN FIRST FIXATIONS (BY WOMEN) ON LEFT AND RIGHT SIDES A SIGNIFICANT DIFFERENCE (from Table 8)

Pair of Adv'ts Number	Total Times On Left	Deviations From Average	Squares of the Deviations
1	20	1.4	1.96
2	23	1.6	2.56
3	25	3.6	12.96
4	24	2.6	6.76
5	23	1.6	2.56
6	20	1.4	1.96
7	22	.6	.36
8	22	.6	.36
9	23	1.6	2.56
10	27	5.6	31.36
11	16	5.4	29.16
12	20	1.4	1.96
13	22	.6	.36
14	16	5.4	29.16
15	18	3.4	11.56
16	23	1.6	2.56
17	20	1.4	1.96
18	24	2.6	6.76
19	19	2.4	5.76
			152.64

S. D. dis equals $\sqrt{\frac{152.64}{19}}$ or 2.834

S. D. av. equals $\frac{2.834}{\sqrt{19}}$ or .6501

S. D. diff. is $\sqrt{\frac{(.65)^2}{19} \text{ plus } \frac{(.65)^2}{19}}$

Average fixations left 21.4
right 12.6
difference in averages 8.8

IS THE DIFFERENCE IN NUMBER OF FIXATIONS (ALL SUBJECTS) LEFT AND RIGHT A SIGNIFICANT DIFFERENCE? (from Table 9)

Pair of Adv'ts Number	Average Fixations Per Group	Deviations from Average	Squares of Deviations	Average Fixations Per Group	Deviations from averages	Squares of Deviations
1	52.4	.7	.49	51.7	2.4	5.29
2	52.2	.5	.25	48.5	.9	.81
3	51.2	.5	.25	50.2	.8	.64
4	54.2	2.5	6.25	20.5	1.1	1.21
5	51.5	.2	.04	48.7	.7	.49
6	50.2	1.5	2.25	50.7	1.3	1.69
7	49.5	2.2	4.84	48.0	1.4	1.96
8	44.5	7.2	50.84	41.7	7.7	59.29
9	57.2	5.5	30.25	52.7	3.3	10.89
10	50.7	1.0	1.00	50.0	.6	.36
11	50.5	1.2	1.44	48.2	1.2	1.44
12	50.5	1.2	1.44	48.7	.7	.49
13	49.7	2.0	4.00	47.5	1.9	3.61
14	59.2	7.5	55.55	58.2	8.8	77.44
15	50.0	1.7	2.89	49.2	.2	.04
16	51.2	.5	.25	50.7	1.3	1.69
17	55.5	3.8	14.44	51.5	2.1	4.41
18	48.7	3.0	9.00	44.5	4.9	24.01
19	53.0	1.3	1.69	47.5	1.9	3.61
			187.16			199.37

S. D. dis equals $\sqrt{\frac{187.16}{19}}$ or 3.14 S. D. right side is $\sqrt{\frac{199.37}{19}}$ or 3.301

S. D. av.(left) is $\frac{3.14}{\sqrt{19}}$ or .72 S. D. av. (right) is $\frac{3.301}{\sqrt{19}}$ or .7566

S. D. diff equals $\sqrt{\frac{(.72)^2}{19} \text{ plus } \frac{(.7566)^2}{19}}$ or .2396

CORRELATION BETWEEN COUPON VALUE RANKING AND TEST RANKING OF KOLYNOS ADV'TS.

Cost per Inquiry	Advertisement	coupon rank	test rank	Diff.	Square of difference
100 %	Wanted, 500000 Lib. Girls	1	1	0	0
120 %	Full page Kolynos adv't	2	2	0	0
140 %	Dont be a Rumble Seat Rider	3.5	3	.5	.25
140 %	Clips the Wings of Romance	3.5	4	.5	.25
200 %	Breaks Hearts Breaks Dates	5	5	0	0
		sum of squares of diff.			.50

Correlation is $1 - \frac{6 \text{ Sum } D^2}{N(N^2 - 1)}$ or plus .975

IS THE DIFFERENCE IN TOTAL FIXATIONS (PER CASE) LEFT AND RIGHT A SIGNIFICANT DIFFERENCE (from Table 9 using total times)

Pair of Adv'ts Number	Left: Total Number Fixations	Left: Deviation From Average	Left: Squares of Deviations	Right: Total Number Fixations	Right: Deviations From Average	Right: Squares of Deviations
1	210	3.2	10.24	207	9.3	85.49
2	209	2.2	4.84	194	3.7	14.69
3	205	1.8	3.24	201	3.3	10.89
4	217	10.2	100.04	202	4.3	18.49
5	206	.8	.64	195	2.7	7.29
6	201	5.8	33.64	203	5.3	28.09
7	198	8.8	77.44	192	5.7	32.49
8	178	28.8	829.44	167	30.7	942.49
9	229	22.2	492.84	211	13.3	176.89
10	203	3.8	14.44	200	2.3	5.29
11	202	4.8	23.04	193	4.7	22.09
12	202	4.8	23.04	195	2.7	7.29
13	199	7.8	60.64	190	7.7	59.29
14	237	30.2	912.04	233	35.3	1246.09
15	200	6.8	46.24	197	.7	.49
16	205	1.8	3.24	203	5.3	28.09
17	222	15.2	231.04	206	8.3	68.89
18	195	11.8	139.24	178	19.7	388.09
19	212	5.2	27.04	190	7.7	59.29
			3032.36			3202.71

S. D. dis. equals $\sqrt{\frac{3032.36}{19}}$ or 12.63 Right side is $\sqrt{\frac{3202.71}{19}}$ or 12.98

S. D. av. equals $\frac{12.63}{\sqrt{19}}$ or 2.898 Right side is $\frac{12.98}{\sqrt{19}}$ or 2.978

S. D. diff equals $\sqrt{\left(\frac{2.898}{19}\right)^2 \text{ plus } \left(\frac{2.978}{19}\right)^2}$ or 1.015

Average for left is 206.8
right is 197.7
diff. in averages 9.1

IS DIFFERENCE IN NUMBER OF FIXATIONS LEFT AND RIGHT (FOR MEN) A SIGNIFICANT DIFFERENCE (from Table 10)

Pair of Adv'ts	Average Fixations	Deviations From Average	Squares of Deviations	Average Fixations	Deviations From Average	Squares of Deviations
1	32.5	1.4	1.96	35.0	2.9	8.41
2	37.7	3.8	14.44	32.5	.4	.16
3	31.5	2.4	5.76	31.5	.6	.36
4	36.5	2.6	6.76	30.5	1.6	2.56
5	34.2	.3	.09	31.0	1.1	1.21
6	31.7	2.2	4.84	31.5	.6	.36
7	32.2	1.7	2.89	31.2	.9	.81
8	27.2	6.7	64.89	25.0	7.1	50.41
9	36.5	2.6	6.76	33.7	1.6	2.56
10	32.2	1.7	2.89	32.2	.1	.01
11	32.5	1.4	1.96	30.0	2.1	4.41
12	33.7	.2	.04	32.2	.1	.01
13	33.2	.7	.49	29.2	2.9	8.41
14	39.0	5.1	26.01	38.2	6.1	37.21
15	33.5	.4	.16	35.2	3.1	9.61
16	33.0	.9	.81	33.0	.9	.81
17	37.2	3.3	10.89	34.5	2.4	5.76
18	32.0	1.9	3.61	29.0	3.1	9.61
19	36.0	2.1	4.41	30.7	1.4	1.96
			159.66			144.64

S. D. dis. is $\sqrt{\frac{159.66}{19}}$ or 2.899 Right side is $\sqrt{\frac{144.64}{19}}$ or 2.758

S. D. av. is $\frac{2.899}{\sqrt{19}}$ or .6651 S. D. av is $\frac{2.758}{\sqrt{19}}$ or .6329

S. D. diff. is $\sqrt{\frac{(.6651)^2}{19} \text{ plus } \frac{(.6329)^2}{19}}$ or .04436

Average left 33.9
Average right 32.1
diff. in aver. 1.8

IS THE DIFFERENCE IN NUMBER OF FIXATIONS LEFT AND RIGHT (FOR WOMEN) A SIGNIFICANT DIFFERENCE (from Table 11)

Pair of Adv'ts Number	------Left------ Deviations From Average	Squares of Deviations	-----Right------ Deviations from Average	Squares of Deviations
1	.9	.81	2	4
2	3.9	15.21	5	25
3	7.1	50.41	6	36
4	.9	.81	1	1
5	2.9	8.41	0	0
6	2.1	4.41	8	64
7	2.9	8.41	2	4
8	2.9	8.41	2	4
9	11.1	123.21	7	49
10	2.1	4.41	6	36
11	.1	.01	1	1
12	1.9	3.61	1	1
13	2.9	8.41	2	4
14	9.1	82.81	11	121
15	5.9	34.81	3	9
16	1.1	1.21	2	4
17	1.1	1.21	1	1
18	4.9	24.01	7	49
19	3.9	15.21	2	4
		395.19		418

S. D. dis is $\sqrt{\frac{395.19}{19}}$ or 4.564 For right side it is $\sqrt{\frac{418}{19}}$ or 4.69

S. D. av. is $\frac{4.564}{\sqrt{19}}$ or 1.047 right side is $\frac{4.69}{\sqrt{19}}$ or 1.051

S. D. diff. is $\sqrt{\frac{(1.047)^2}{19} \text{ plus } \frac{(1.051)^2}{19}}$ or .3405

Average left 71.9
right 69.0
Diff. averages 2.9

CORRELATION BETWEEN RECALLS FOR MEN AND RECALLS FOR WOMEN ON "A" ADV'TS.

1	2	3	4	5	6	7
Recalls of Adv't A		Deviation of col. 1	Deviation of col 2.	Squares of Column 3	Squares of Column 4	Column 3 times
Men	Women	from aver.	from aver.			Column 4
21	10	13.7	5	187.69	25	68.5
3	3	-4.3	-2	17.99	4	8.6
3	6	-4.3	1	17.99	1	-4.3
4	3	-3.3	-2	10.89	4	6.6
0	1	-7.3	-4	53.29	16	29.2
3	9	-4.3	4	17.99	16	-17.2
24	13	16.7	8	278.89	64	135.6
5	2	-2.3	-3	5.29	9	6.9
9	8	1.7	3	2.89	9	5.1
6	6	-1.3	1	1.69	1	-1.3
1	1	-6.3	-4	39.69	16	25.2
9	4	1.7	-1	2.89	1	-1.7
7	3	- .3	-2	.09	4	.6
2	1	-5.3	-4	28.09	16	21.2
3	5	-4.3	1	17.99	1	-4.3
4	8	-3.3	3	10.89	9	-9.9
4	1	-3.3	-4	10.89	16	13.2
18	6	10.7	1	114.49	1	10.7
13	6	5.7	1	32.49	1	5.7
139	96			752.10	216	308.4

139 divided by 19 equals 7.3 average recalls on left side by men
96 " " 19 " 5.0 " " " " " " " women

S. D. dis. for men equals $\sqrt{\frac{752.10}{19}}$ or 6.3 For women it is $\sqrt{\frac{216}{19}}$ or 3.4

Correlation between men and women (left side) is $\frac{308.4}{19 \times 6.3 \times 3.4}$ or .75

STANDARD DEVIATION DIFFERENCE IN TIME PER PERSON (PAIR OF ADV'TS 40)

-------Adv't A-------			-------Adv't B--------		
Time per Person	Deviation	Deviation Squared	Time per Person	Deviation	Deviation Squared
10.5	2.97	7.1009	5.1	1.66	2.7556
21.7	8.23	67.7329	5.3	1.46	2.1316
7.1	6.37	40.5769	7.6	.84	.7056
15.0	1.53	2.3409	4.8	1.96	3.8416
8.9	4.57	20.8849	5.5	1.26	1.5876
9.9	3.57	12.7449	5.0	1.76	3.0976
21.2	7.73	59.7429	8.8	2.04	4.1616
9.3	4.17	17.3889	8.5	2.74	7.5076
14.5	1.03	1.0609	4.9	1.86	3.4596
14.5	1.03	1.0609	4.3	2.46	6.0516
12.1	1.37	1.8769	6.2	.56	.3136
12.4	1.07	1.1449	7.5	.74	.5476
11.7	1.77	3.1329	9.0	2.24	5.0176
16.6	2.13	4.5369	8.2	1.44	2.0736
16.6	2.13	4.5369	9.8	3.04	9.2416
		245.8435			52.4940

S. D. dis. equals $\sqrt{\frac{245.8435}{15}}$ or 1.045 for Adv't A

$\sqrt{\frac{52.494}{15}}$ or .483 for Adv't B

S. D. av. equals $\frac{1.045}{\sqrt{15}}$ or .2699 for Adv't A

$\frac{.483}{\sqrt{15}}$ or .1247 for Adv't B

S. D. diff equals $\sqrt{\frac{(.2699)^2}{15} \text{ plus } \frac{(.1247)^2}{15}}$ or .005892

CORRELATION BETWEEN RECALLS FOR MEN AND RECALLS FOR WOMEN ON "B" ADV'TS

1	2	3	4	5	6	7
Recalls of Adv't B		Deviation of Col. 1	Deviation of Col. 2	Squares of	Squares of	Column 3 times
Men	Women	from aver.	from aver.	Column 3	Column 4	Column 4
2	2	-2	-0.7	4	0.49	1.4
2	1	-2	-1.7	4	2.89	3.4
3	2	-1	-0.7	1	0.49	0.7
2	3	-2	0.3	4	0.09	-0.6
1	1	-4	-1.7	16	2.89	6.8
3.	2	-1	-0.7	1	0.49	0.7
4	4	0	1.3	0	1.69	0.0
4	2	0	-0.7	0	0.49	0.0
7	6	3	3.3	9	10.89	9.9
2	3	-2	0.3	4	.09	-0.6
5	1	1	-1.7	1	2.89	-1.7
3	5	-1	2.3	1	5.29	-2.3
10	2	6	-0.7	36	0.49	-4.2
1	1	-3	-1.7	9	2.89	5.1
15	14	11	11.3	121	127.69	124.3
1	0	-3	-2.7	9	7.29	8.1
3	1	-1	-1.7	1	2.89	1.7
4	1	0	-1.7	0	2.89	0.0
3	0	-1	-2.7	1	7.29	2.7
			Totals	219	181.11	163.4

S. D. dis. for men equals $\sqrt{\frac{219}{19}}$ equals 3.4

for women equals $\sqrt{\frac{181.11}{19}}$ equals 3.1

Correlation is $\frac{166.1}{19 \times 3.4 \times 3.1}$ equals plus .83

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